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LEARNING OF BASAL READING SKILLS BY MENTALLY HANDICAPPED AND NON-MENTALLY HANDICAPPED PUPILS.

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AN INVESTIGATION OF THE ACHIEVEMENT IN BASAL READING SKILLS BY MENTALLY HANDICAPPED, INTELLECTUALLY NORMAL, AND SUPERIOR PUPILS TAUGHT WITH THE SCOTT, FORESMAN NEW BASIC READERS PROGRAM AT READING INSTRUCTIONAL LEVELS 2, 3, 4, AND 5 IS REPORTED. SPECIFIC RESEARCH OBJECTIVES WERE--(1) TO IDENTIFY SEQUENCES AMONG BASAL READING SKILLS IN FIVE CATEGORIES (PHONETIC ANALYSIS, STRUCTURAL ANALYSIS, DICTIONARY, WORD FUNCTIONS, AND COMPREHENSION), (2) TO EXAMINE INTELLECTUAL PROCESSES RELATED TO ACHIEVEMENT IN SELECTED BASAL READING SKILLS (ASSOCIATIVE MEMORY, CONCEPTUALIZATION, VERBAL MEANING, AND REASONING), (3) TO DESCRIBE TRENDS IN ACHIEVEMENT IN BASAL READING SKILLS OVER THE INSTRUCTIONAL LEVELS STUDIED, (4) TO COMPARE RETARDED AND NORMAL GROUPS' BEGINNING LEVELS AND ACHIEVEMENT IN THE BASAL SKILLS FOR A 7-MONTH INSTRUCTIONAL PERIOD, AND (5) TO COMPARE NORMAL AND SUPERIOR GROUPS' BEGINNING LEVELS AND ACHIEVEMENT IN THE BASAL SKILLS FOR A 7-MONTH PERIOD. SUBJECTS WERE 947 PUPILS FROM THREE GEORGIA SCHOOL SYSTEMS. A TEST-RETEST DESIGN WAS USED. INVESTIGATION PROCEDURES AND METHODS OF DATA ANALYSIS ARE DESCRIBED. OVER 150 TABLES AND FIGURES ARE PRESENTED. SPECIMEN TESTS AND BASIC STATISTICAL DATA ARE APPENDED. (RH)

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Kathryn A. Blake, Ira E. Aaron, and Helen R. Westbrook

with the assistance of

Lynn Monroe
Malese Anderson
Harry J. Cowart
Joan Bond
and others

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University of Georgia
Athens, Georgia

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PREFACE

A complex and extensive project like the present one involves the participation of many people. To acknowledge those whose cooperation and assistance contributed so much to completing the research is indeed a pleasure. Appreciation is extended to all of those named below.

Harry Cowart, Malese Anderson, Lynn Monroe, and Joan Bond merit special recognition. Mr. Cowart served as liaison with the school personnel participating in the main phase of the project. In addition, he supervised the very complicated work involved in the production, distribution, and collection of test materials, the distribution of teaching materials, the scoring of tests and encoding of data, and the reproduction of the final report. Miss Anderson assumed major responsibilities in all phases of the project: task analyses of the reading instructional programs, development of tests and other materials, collection of data, analyses of data, and preparation of the final report. Mrs. Monroe supervised the typing involved in producing the tests and other project materials and the typing of the final report as well as the other secretarial work in the project; in addition, she supervised the keypunching and verifying of the data. Throughout the project, Miss Bond participated in reproducing project materials, scoring tests and encoding data, and reproducing the final report.

Charlotte Williams and Murray Tillman of the University of Georgia worked on phases of the project. Dr. Williams consulted on the analyses of the data; further, she supervised the computer processing. Dr. Tillman worked with school personnel in identifying subjects; he also supervised the team of research assistants who administered instruments to obtain data for subject selection. Cooperating as consultants were Andrew Shotick and Louis Bashaw of the University of Georgia, Theodore Clymer of the University of Minnesota, and Helen Robinson of the University of Chicago.

A large number of public school pupils participated in the pilot testing and the main study. Personnel in four school systems in Georgia provided the setting in which the research was conducted and participated in project activities. The four school systems were the Franklin County School System, the Chatham County School System, the DeKalb County School System, and the Clarke County School System.

Chief school administrators and supervisory personnel who cooperated in the work of the project were the following: DeKalb County -- Jim Cherry, Harold Dennis, Jeptha Greer, Harriet Matthews, and Charlotte Freeman; Franklin County -- O. E. Bryant and Sarah Duncan; Chatham County -- T. M. Marshall, Saxon Bargeron, and Dorothy Ayers; Clarke County -- S. W. Wood and Alton Ellis.

Principals in whose schools the pilot testing and the main study were conducted were Jack Bradley, Allea Betts, Phillip Bradley, Durwood Davis, Wilbur Derahimer, Jesse Durrence, Oliver Edwards, Harry Gupton, Joseph Hamilton, O. T. Harman, Elliot Harvard, Reese Holstun, Harvin Jolly, Claude Kornegey, John May, Huey Murphy, Hemans Oliver, Zella Potterfield, Jack Ratley, and Marion Thompson.

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Robert Brown and Wayne Swindell were statistical assistants during the pilot testing phase of the project. During the final phase, John Waters and Marshall Waters, III, were responsible for statistical work. Marshall Waters did the programming and other activities involved in computer processing. John Waters took leadership in decoding data and performing the final statistical analyses.

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Those who are named above in this prefatory statement made valuable contributions to the project. However, the project directors alone bear the entire and final responsibility for any errors and inadequacies in planning, executing, interpreting, and reporting the investigation.

Kathryn Blake
Ira Aaron
Helen Westbrook

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CHAPTER 1

PROBLEM

Purpose and Objectives

The purpose of this investigation was to study achievement in basal reading skills by mentally handicapped, intellectually normal, and intellectually superior pupils taught in a basal reading program at reading instructional levels 2, 3, 4, and 5. Following from this purpose were research objectives pertaining to sequences among basal reading skills, intellectual processes related to basal reading skills, trends in achievement of basal reading skills over reading instructional levels, intellectually retarded and normal groups' achievement in basal reading skills, and intellectually normal and superior groups' achievement in basal reading skills. The research objectives are specified below.

1. Sequences Among Basal Reading Skills

   The research objective was to identify sequences among basal reading skills in five categories: phonetic analysis, structural analysis, dictionary, word functions, and comprehension.

   a. Expected Sequences Among Basal Reading Skills. -- Among skills in a given category of basal reading skills, what sequence can be expected, a priori, on the basis of the criterion, level of complexity?

   b. Goodness of Fit of the Simplex Model. -- Does the simplex model fit sets of data describing skills in an expected sequence which were ordered, a priori, on the basis of the criterion, level of complexity?

2. Intellectual Processes Related to Basal Reading Skills

   The research objective was to examine intellectual processes related to achievement in selected basal reading skills.

a. Identification of Processes. -- Which, of a selected set of intellectual processes, are related singly, and in combination, to achievement in each basal reading skill?

b. Extent of Relationship. -- To what extent are the identified intellectual processes and combinations of intellectual processes related to achievement in each basal reading skill?

c. Relative Contribution. -- What is the relative contribution, or weighting, of each intellectual process when combinations of intellectual processes are related to achievement in a given basal reading skill?

d. Differences Among Skills. -- Do intellectual processes related to achievement differ among basal reading skills?

3. Trends in Achievement of Basal Reading Skills Over Reading Instructional Levels

The research objective was to describe trends in achievement of basal reading skills over reading instructional levels 2, 3, 4, and 5. The following questions pertained to retarded, normal, and superior groups considered separately.

a. Presence of a Trend. -- For a given basal reading skill, is there a trend in the means at reading instructional levels 2, 3, 4, and 5?

b. Nature of the Trend. -- For a given basal reading skill, what is the nature of the trend in the means at reading instructional levels 2, 3, 4, and 5?

4. Intellectually Retarded and Normal Groups' Achievement in the Basal Reading Skills

The research objective was to compare retarded and normal groups' achievement in the basal reading skills. The research questions pertained to retarded and normal groups who are equated on MA level and an independent measure of general reading achievement level and who are taught at the same general reading instructional levels.

a. Level of Acquisition in the Basal Reading Skills. -- At the primary and intermediate reading instructional levels, do retarded and normal groups differ in level of acquisition in the basal reading skills at the beginning of a 7-month instructional period?

b. Rate of Acquisition in the Basal Reading Skills. -- At the primary and intermediate reading instructional levels, do retarded and normal groups differ in rate of acquisition in the basal reading skills during a 7-month instructional period?

5. Intellectually Normal and Superior Groups' Achievement in the Basal Reading Skills

The research objective was to compare normal and superior groups' achievement in the basal reading skills. The research questions pertained to normal and superior groups who are equated on CA level and who are taught at the same reading instructional levels[1].

a. Level of Acquisition in the Basal Reading Skills. -- At the primary and intermediate reading instructional levels, do normal and superior groups differ in level of acquisition in the basal reading skills at the beginning of a 7-month instructional period?

b. Rate of Acquisition in the Basal Reading Skills. -- At the primary and intermediate reading instructional levels, do normal and superior groups differ in rate of acquisition in the basal reading skills during a 7-month instructional period?

Related Research

Essentially, the five research objectives represented the investigators' intent to examine intellectually retarded, normal, and superior subjects' reading achievement from several points of view. That is, a constant set of procedures was used with samples from the same population

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[1]Related, and very important, research questions are implicit in the following problem: Do normal and superior groups, or retarded and superior groups, who are equated on MA and general reading achievement levels and who are taught at the same reading instructional levels, differ in level and rate of acquisition in basal reading skills? This problem was not studied in the present investigation. The present investigators could not locate a sufficient sample of intellectually superior pupils at reading instructional levels 2, 3, 4, and 5 who could be equated with less intelligent pupils on MA, reading achievement level, and instructional level at which they were taught reading.

in collecting data for the several objectives. The idea was to obtain complementary sets of information. For example, the studies of sequences and processes pertained to dimensions of the reading act. These studies were important in themselves; in addition, they yielded information which was considered useful in understanding the information about trends over reading instructional levels. Similarly, information about trends was considered important in itself. However, along with information about processes and sequences, information about trends was considered pertinent to understanding relationships between intellectually retarded and normal subjects' reading achievement and intellectually normal and superior subjects' reading achievement.

The present investigators did not locate previous projects devoted to collecting such complementary sets of data relevant to retarded, normal, and superior subjects' reading achievement. Consequently, a brief citation of research related to phases of this investigation is reported here. The order of the review will follow the major objectives of the study.

Sequences Among Basal Reading Skills. -- Authors of basal reading series and other types of programs for teaching reading, of necessity, proposed sequences for teaching reading skills. In addition, those who wrote about reading instruction in other contexts commented on sequences for presenting the various basal reading skills: e.g., Aaron (1961, 1964), Bond and Wagner (1966), Gray (1960), McKee (1966), and Russell (1961). These reading specialists proposed sequences on the basis of competent professional judgment and extensive experience in reading instruction. The present investigators did not locate studies devoted primarily to identifying sequences which, in Manning's (1960, p. 116) terms, are based on "the behavior of the learners themselves."

Intellectual Processes Related to Basal Reading Skills. -- Logical analyses and empirical investigations have yielded useful information about cognitive processes involved in reading achievement. Investigators who were concerned with this problem included Bond and Clymer (1955), Holmes and Singer (1966), Raymond (1955), and Stake (1958).

The present investigators did not locate studies which involved using a restricted number of intellectual processes with a wide range of reading skills and a large number of subjects.

Trends in Achievement Over Reading Instructional Levels. -- Investigators who studied intellectually retarded subjects' progress in reading over periods ranging from one to four years included Bradway (1939), Engle (1942), Janes (1953), McElwee (1931), Murdoch (1918), Nemzek and Meixner (1939), and Walsh (1938). Dunn (1954) and Kirk (1964) reviewed and evaluated these studies. The present investigators did not locate investigations completed since these earlier studies. Nor did the investigators locate studies of long-term trends in normal and superior pupils' reading achievement.

Intellectually Retarded and Normal Groups' Achievement in the Basal Reading Skills. -- Jones (1919-1920) and Merrill (1924) conducted earlier studies of reading achievement of retarded subjects and more intelligent subjects who were equated on MA. In later studies, Bleismer (1952) compared retarded and intellectually superior subjects while Dunn (1954) and Shotick (1960) compared retarded and normal subjects. In addition to controlling MA, Shotick equated his subjects on reading grade placement with the Stanford Achievement Test. As part of a larger investigation of subjects' progress in learning arithmetic, Klausmeier, Feldhusen and Check (1959) examined reading achievement of retarded, normal, and superior pupils who were equated on MA. Davidson (1931) studied retarded, normal, and superior subjects who were equated on MA at the four years six months level. She compared their progress during a 1 1/2 month instructional program in reading. The present investigators did not locate studies in which MA, reading achievement level, and reading instructional level were controlled in an examination of both level and rate of acquisition of basal reading skills in several categories.

Intellectually Normal and Superior Groups' Achievement in the Basal Reading Skills. -- Several investigators studied the reading achievement of intellectually superior and less intelligent elementary school pupils who were equated on MA. Bleismer (1952) and Merrill

(1924) studied status. Davidson (1931) examined rate of acquisition over a specified period of time, 1 1/2 months. Although a number of people have commented on the topic, the present investigators located no research on the level of acquisition and rate of acquisition of normal and superior pupils equated on CA.

Extensions. -- The present investigation was designed to extend some of the earlier research on reading achievement. Rationally derived expectations about sequences were examined in the context of data obtained from pupils taught at reading instructional levels 2, 3, 4, and 5 of a single basal reading program. A small number of intellectual processes was studied in conjunction with a large number of subjects in order to minimize some problems frequently encountered with multivariate procedures. Retarded and normal subjects were equated not only on MA level but also on an independent measure of general reading achievement level and on the reading instructional level at which they were taught; the normal subjects were achieving at instructional levels generally expected of children at their CA levels (and thus their MA levels). All subjects were taught at reading instructional levels 2, 3, 4, and 5 in the same basal reading program. The investigation covered the teaching of basal reading over a period of a school year; the tests sampling basal reading skills were administered seven months apart. Ostensibly, there was sufficient time for progress in reading to occur and yet probably not enough time for operation of possible contaminating factors like experiences during the summer, and so on. In contrast with more global measures of reading achievement, tests constructed for use in the study were designed to sample individual reading skills encompassed by the basal reading program taught to the pupils. The investigators conducted an orientation and in-service program for teachers who participated in the project. That is, participating teachers were continuously oriented to current phases of the project and were given in-service instruction in the teaching of reading.

CHAPTER 2

PROCEDURES

The purpose in this investigation was to study achievement in basal reading skills by mentally handicapped, intellectually normal, and intellectually superior pupils taught at reading instructional levels 2, 3, 4, and 5. Following from this purpose were specific research objectives pertaining to sequences among basal reading skills, intellectual processes related to basal reading skills, trends in achievement of basal reading skills over four reading instructional levels, intellectually retarded and normal groups' achievement in basal reading skills, and intellectually normal and superior groups' achievement in basal reading skills. Accomplishing the purpose and objectives of the study required sets of procedures for selecting subjects, selecting basal reading skills, selecting intellectual processes, selecting and teaching a basal reading program, conducting an orientation program for teachers, developing tests to assess the selected basal reading skills and intellectual processes, collecting data, and analyzing data. The present chapter consists of details pertaining to these sets of procedures. The detailed description is preceded by an overview of the investigation which contains a summary of the procedures.

Overview of the Investigation

Subjects. -- Subjects were 947 pupils in 44 classes who were taught at reading instructional levels 2, 3, 4, and 5, respectively, and who satisfied certain other selection criteria. The total number of pupils was divided into two groups: 639 subjects were in the processes-sequences group; 308 subjects were in the combined retarded, normal, and superior groups (108 retarded subjects, 108 normal subjects, and 92 superior subjects).

Basal Reading Skills. -- A sample of 50 basal reading skills was selected for study. These skills were selected from six categories: identifying words at sight, phonetic analysis skills, structural analysis skills, dictionary skills, word functions skills, and comprehension skills.

Intellectual Processes. -- Four intellectual processes were selected from the domain of possibly relevant attributes. The four intellectual processes chosen for study were associative memory, conceptualization, verbal meaning, and reasoning.

Basal Reading Program. -- The Scott, Foresman New Basic Readers program was used in teaching reading to pupils in the 44 participating classes. The teachers were furnished the materials to teach the basal reading program. The amount of time which the teachers spent in reading instruction was controlled: approximately 1 1/2 hours daily for pupils at the primary level and approximately 1 1/4 hours daily for pupils at the intermediate level.

Orientation Program for Teachers. -- The investigators conducted an orientation program for participating teachers. This program was devoted to in-service work on teaching reading and to briefing about project procedures and related activities.

Tests for Assessing the Basal Reading Skills and the Intellectual Processes. -- Twenty tests were developed for assessing the 50 basal reading skills selected for study; most of these tests consisted of several subtests specific to particular skills. Four previously-used tests of intellectual processes were selected and modified for the purposes of the present study.

Data Collection Procedures. -- The directions for all tests were recorded on audio tape. In addition, test items (content per se) for tests involving auditory stimuli were taped (e.g., test #10, Phonics Sounds). The teachers used these tapes, and written copies of test directions and procedures, in administering the tests to pupils in their classes. There was one exception: project personnel administered test #18, Sight Vocabulary to subjects individually.

The data collection schedule was the following. In the fall (October), pupils were administered tests #1-#17 which assessed 41 basal reading skills; seven months later in the spring (May), pupils were administered tests #1-#17 again. During September and October, pupils were administered test #18 (Sight Vocabulary). In March, pupils were administered test #19 (Figurative Language), test #20 (Critical Reading), and the tests sampling the four intellectual processes.

Data Analyses. -- The procedures used to analyze data pertinent to each research question are outlined below. The information for each research question includes the subjects, the data, and the techniques for the analyses.

1. Sequences Among Basal Reading Skills.

   a. Subjects: processes-sequences group.

   b. Data: task analyses and test content descriptions indicating the nature of the basal reading skills as tested; scores on spring administration of tests #1-#17 and scores on test #19.

   c. Analyses: rational analyses to establish expected sequences and Kaiser's (1962) procedures for scaling a simplex.

2. Intellectual Processes Related to Acquisition of Basal Reading Skills.

   a. Subjects: processes-sequences group.

   b. Data: scores on the intellectual processes tests, scores on the spring administration of reading tests #1-#17 and scores on tests #19 and #20.

   c. Analyses: multiple and partial regression procedures--independent variables were scores on the intellectual processes tests, dependent variables were scores on the reading tests.

3. Trends Over Reading Instructional Levels.

   a. Subjects: retarded, normal, and superior groups.

b. Data: scores on fall administration of tests #1-#17 and scores on tests #18, #19, and #20.

c. Analyses: within each intelligence level, single factor analyses of variance and examination for linear, quadratic, and cubic trends.

4. Retarded, Normal, and Superior Pupils' Levels of Acquisition on the Basal Reading Skills at the Beginning of the 7-month Instructional Period.

a. Subjects: the retarded and normal groups; the normal and superior groups.

b. Data: scores on fall administration of tests #1-#17 and scores on tests #18, #19, and #20.

c. Analyses: *t* tests

5. Retarded, Normal, and Superior Pupils' Rates of Acquisition of Basal Reading Skills During the 7-month Instructional Period.

a. Subjects: the retarded and normal groups; the normal and superior groups.

b. Data: scores on the fall and spring administrations of tests #1-#17.

c. Analyses: two-factor analyses of variance -- first factor was intelligence level, second factor was repeated measures (fall, spring) of basal reading skills.

Subjects

Information about the subjects is presented below. This presentation is organized according to three headings: general description of the total group of subjects, the processes-sequences group, and the retarded, normal, and superior groups.

General Description of the Total Group of Subjects

Subjects were 947 pupils who were taught at reading instructional levels[1] 2, 3, 4, and 5. They were enrolled in 44 public school classes[2]. These classes were taught by 39 teachers[3] and labeled administratively as grades 2, 3, 4, and 5 and as intermediate and secondary special classes for the mentally retarded. Pupils in these classes were taught the basal reading skills at reading instructional levels 1 through 6 in the Scott, Foresman New Basic Readers program.

The 44 classes were selected from three school systems in Georgia: the Chatham County School System, the DeKalb County School System, and the Franklin County School System. The DeKalb County School System is in a large urban area, metropolitan Atlanta. The Chatham County School System is in a middle-size urban area, Savannah. The Franklin County School System encompasses rural areas and small urban areas, Carnesville, Lavonia, and Royston.

The 44 participating classes had 1163 pupils enrolled. These 1163 pupils participated in project activities. However, only 947 pupils were considered to be subjects, and data for only these 947 subjects were used in the analyses.

Attrition and failure to meet the subject selection criteria were reasons why the remaining 216 pupils were not included as subjects in the investigation. Fifty-two pupils were lost through attrition: 35

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[1]For the purposes of this investigation, reading instructional level was defined as the level at which the pupils were taught in the Scott, Foresman New Basic Readers program.

[2]A primary advantage in using such a large number of classes was to minimize the possibility of occurrence of what Lindquist (1953) has labeled Type G errors. Such errors associated with using intact groups of subjects are a major design problem in a project like the present one.

[3]Some teachers taught reading to more than one class.

pupils moved to non-participating schools or moved out of the school systems during the year, eight pupils enrolled in vocational rehabilitation work-study programs, and nine pupils withdrew from school. One hundred sixty-four pupils were eliminated because they did not satisfy the subject selection criteria. These criteria were the following: the subjects had to have IQs of 50 or higher; they had to be placed in the fall at reading instructional levels 2, 3, 4, or 5; and they had to be free from physical, sensory, or emotional difficulties which were judged sufficiently severe to interfere with response to the instructional program and to the tests used in the investigation.

In summary, 947 subjects remained after the subject selection criteria were applied and after the effects of attrition were taken into account. These subjects were categorized into the processes-sequences group or into the retarded, normal, and superior groups. The 308 subjects in the retarded, normal, and superior groups were selected by procedures described below. The 639 subjects who remained were designated the processes-sequences group.

For research design purposes, it was necessary that the subjects in the processes-sequences group and the combined retarded, normal, and superior groups be comparable in facility on the basal reading skills. To obtain evidence about this requirement, the subjects' scores on the spring tests of the basal reading skills were compared. The means for the two groups are presented in tabular form in Appendix A. No pair of means differed more than a fraction of a point, and the direction of the differences was not constant.

Processes-Sequences Group

The processes-sequences group included 639 pupils from the 44 classes. This total group was composed of 146 pupils at reading instructional level 2, 223 pupils at reading instructional level 3, 152 pupils at reading instructional level 4, and 118 pupils at reading instructional level 5.

Intellectually Retarded, Normal, and Superior Groups

The retarded, normal, and superior subjects were 308 pupils from the 44 project classes. The IQ limits specified for each group were the following: retarded group, IQ within the range, 50-80; normal group, IQ within the range, 90-110; superior group, IQ 120 or higher.

As required by the research objectives specified in Chapter 1, the retarded and normal groups were equated on mean MA and mean general reading achievement level. The superior and normal groups were equated on mean CA. In addition, frequencies of boys and girls did not differ significantly.

Project personnel administered the instruments used for assessing intelligence level and level of general reading achievement. Intelligence level was assessed with the 1960 Revision of the Stanford Binet Intelligence Test, Form LM. Level of general reading achievement was assessed with the Georgia Informal Reading Inventory, Form SF(Appendix B). This informal reading inventory was developed especially for the present project to assess facility with material in the reading program used, the Scott, Foresman New Basic Readers program. Note that this measure of reading achievement was used as an independent control variable; it was separate from the measures of 50 reading skills which were used as dependent variables.

The total numbers of subjects in the groups were 108 retarded subjects, 108 normal subjects; and 92 superior subjects. Within each group, there were equal numbers of subjects at reading instructional levels 2, 3, 4, and 5, respectively. For the considerations of levels and rates of acquisition, the subjects were grouped into two levels[1]:

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[1] In reporting results pertinent to rate and level of acquisition of the basal reading skills, the four reading instructional levels were combined into two reading instructional levels for mechanical reasons. That is, before the final report was prepared, the groups' scores were analyzed at four reading instructional levels and two reading instructional levels. The results of the two sets of analyses supported the same generalizations. Since it was justifiable, the data organization by the primary and intermediate reading instructional levels was chosen for the sake of increased brevity and simplicity in the tabular and textual presentation.

primary, reading instructional levels 2 and 3; intermediate, reading instructional levels 4 and 5. For the analyses of trends over instructional levels, the subjects were grouped by the four reading instructional levels.

Tables 1 and 2 contain descriptive statistics[1] portraying MA, CA, IQ, general level of reading achievement, and distributions of boys and girls in the retarded, normal, and superior groups. Note that the MA of the retarded group, the MA and CA of the normal group, and the CA of the superior group were at the age levels conventionally assigned to administrative grades 2, 3, 4, and 5, respectively.

Normal and Retarded Groups

The normal and retarded samples were equated as groups on mean MA level, mean general reading achievement level, and frequences of males and females. The model here was that used by Cruickshank (1946) in his study of arithmetic achievement and by Shotick (1960) in his study of reading comprehension. The tables in Appendix C contain results of the statistical tests. These data revealed that the requirements of the research design were satisfied.

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[1] For descriptive statistics, and subsequently for the inferential procedures with the retarded and normal groups and the normal and superior groups, the subject variables were analyzed for reading instructional levels 2, 3, 4, and 5, as well as for the primary and intermediate instructional levels. There were two reasons for this. First, consideration of trends involved four reading instructional levels while considerations of level and rate of acquisition only necessitated two reading instructional levels. Second, it was necessary to insure that a differential loading on a variable did not occur within the primary or intermediate instructional levels and yet be cancelled out and thus masked when subjects at separate reading instructional levels were combined into the primary and intermediate reading instructional levels. Thus, the generalizations about relationships among subject variables at reading instructional levels refer to reading instructional levels 2, 3, 4, and 5, as well as the primary and intermediate reading instructional levels. These generalizations are items 3, 4, and 5 in the presentation of relationships among subject variables for the normal and retarded groups and the normal and superior groups, respectively.

Table 1

IQs, CAs, MAs, and Reading Achievement Levels of Subjects in the Retarded, Normal, and Superior Groups

A. Subjects Organized by Reading Instructional Levels 2, 3, 4, 5

Variable	R.I.L.[a]	Retarded group n=27 per cell $\bar{X}$	Retarded group n=27 per cell SD	Normal group n=27 per cell $\bar{X}$	Normal group n=27 per cell SD	Superior group n=23 per cell $\bar{X}$	Superior group n=23 per cell SD
IQ	2	68.26	9.48	102.19	7.57	127.17	9.59
	3	71.41	9.86	97.78	5.69	127.43	7.20
	4	71.07	9.42	100.74	5.85	124.91	5.52
	5	71.37	7.43	99.96	4.89	128.30	9.60
MA (Months)	2	92.74	15.19	92.85	7.72	114.04	8.13
	3	102.15	10.77	103.89	5.32	129.96	7.10
	4	113.56	21.32	116.04	7.31	142.70	5.54
	5	126.22	12.77	127.81	7.08	165.78	15.00
CA (Months)	2	141.56	27.31	89.78	4.41	89.65	1.92
	3	150.89	29.31	104.00	7.22	100.43	3.30
	4	171.93	40.42	112.15	4.18	111.26	3.73
	5	188.37	17.18	124.85	5.27	124.57	3.74
Reading achievement level	2	1.93	0.38	2.11	0.42	2.43	0.84
	3	2.85	0.36	2.81	0.88	4.83	1.27
	4	3.63	0.74	3.70	0.82	4.96	1.19
	5	5.00	0.92	5.15	0.72	5.91	0.29

[a]The term reading instructional levels is abbreviated to R.I.L. here and in subsequent tables where necessary.

Table 1 (Continued)

B. Subjects Organized by Primary and Intermediate Reading Instructional Levels

Variable	R.I.L.	Retarded group n=54 per cell $\bar{X}$	Retarded group n=54 per cell SD	Normal group n=54 per cell $\bar{X}$	Normal group n=54 per cell SD	Superior group n=46 per cell $\bar{X}$	Superior group n=46 per cell SD
IQ	P	69.83	9.71	99.98	7.00	127.30	8.39
	I	71.22	8.41	100.35	5.36	126.61	7.93
MA (Months)	P	97.44	13.88	98.37	8.61	122.00	11.03
	I	119.89	18.54	121.93	9.28	154.24	16.16
CA (Months)	P	146.22	28.46	96.89	9.31	95.04	6.07
	I	180.15	31.86	118.50	20.99	117.91	7.67
Reading achievement level	P	2.39	0.60	2.46	0.77	3.63	1.61
	I	4.31	1.08	4.43	1.06	5.43	0.98

Table 2

Distribution of Males and Females in the Retarded, Normal, and Superior Groups

A. Subjects Organized by Reading Instructional Levels 2, 3, 4, 5

Intelligence group	Sex	Reading instructional level 2	3	4	5	Total by intelligence group
Retarded group	M	9	14	11	16	50
	F	18	13	16	11	58
Normal group	M	9	14	13	12	48
	F	18	13	14	15	60
Superior group	M	13	10	11	8	42
	F	10	13	12	15	50

Table 2 (Continued)

Intelligence group	Sex	Reading instructional level 2	3	4	5	Total by intelligence group
Total by instructional level	M	31	38	35	36	140[a]
	F	46	39	42	41	168[b]

B. Subjects Organized by Primary and Intermediate Reading Instructional Levels

Intelligence group	Sex	Reading instructional level Primary	Intermediate	Total by intelligence group
Retarded group	M	23	27	50
	F	31	27	58
Normal group	M	23	25	48
	F	31	29	60
Superior group	M	23	19	42
	F	23	27	50
Total by instructional level	M	69	71	140[c]
	F	85	83	168[d]

[a,b,c,d]These numbers represent the total subjects by instructional levels, not the total subjects in the three intelligence groups.

1. The retarded and normal groups were equivalent in MA, general reading achievement level, and frequencies of boys and girls.

2. The retarded and normal groups' IQs and CAs differed in the expected directions: i.e., the retarded group had the higher CA and lower IQ.

3. Groups at the different reading instructional levels varied in the expected directions in MA, CA, and reading achievement levels. The groups at each reading instructional level had higher means than those preceding it.

4. The groups at the different reading instructional levels were homogeneous in IQ and frequencies of boys and girls.

5. On all variables, the intelligence group X instructional level interaction factors were not significant. That is, the relations between the retarded and normal groups on IQ, MA, CA, reading achievement level, and the sex distribution were homogeneous over the reading instructional levels.

Normal and Superior Groups

The normal and superior samples were equated as groups on mean CA. The results of the statistical tests are presented in the tables in Appendix C. Listed below are relationships indicated by these data.

1. The groups were equivalent in CA and frequencies of boys and girls.

2. The groups' IQs, MAs, and reading achievement levels differed in the expected directions: i.e., the superior group exceeded the normal group.

3. Groups at the different reading instructional levels varied in the expected directions in MA, CA, and reading achievement level. The group at each reading instructional level had higher means than those preceding it.

4. The groups at the different reading instructional levels were homogeneous in IQ and frequencies of boys and girls.

5. On IQ, CA, and the sex distribution, there was no interaction between IQ groups and reading instructional levels. Interactions did occur on the MA and general reading achievement levels. On these two variables, differences between the normal and superior groups were larger at the higher reading instructional levels.

Selection of the Basal Reading Skills

A sample of 50 basal reading skills was selected for study. The material below includes a description of steps used in selecting these skills and an enumeration of the skills selected.

Steps in Selection of Basal Reading Skills

Three steps[1] were involved in selecting the basal reading skills. These steps are listed below.

Selecting the Basal Reading Program. -- The first step was to select a basal reading program to use in the project classes. Currently used basal reading programs were examined. The Scott, Foresman New Basic Readers program was chosen as a program which encompassed basal reading skills of interest in the project.

Making a Task Analysis. -- The second step was to make a task analysis of the Scott, Foresman New Basic Readers program at each reading instructional level from the preprimer level through reading instructional level 6. This task analysis yielded information about skills taught in the program: e.g., how the skills were defined, what activities were involved in performing the skills successfully, where the skills were introduced, where they were reviewed, and how they were taught.

Selecting the Basal Reading Skills. -- The third step was to select the skills to test. The domain was the total set of skills taught at reading instructional levels preprimer through 6 in the Scott, Foresman

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[1]A number of references were consulted for information pertinent to issues and procedures involved in selecting the basal reading skills and the intellectual processes. Examples of these references were the following: Aaron (1961, 1964); Austin and Morrison (1963); Bloom (1963); Bond and Wagner (1960); Gagné (1965); Gray (1960); Russell and Fea (1963); Staats and Staats (1963); Underwood (1957); and Travers (1963).

New Basic Readers program. This total set of skills was sampled to obtain data relevant to the research objectives. Fifty basal reading skills finally were selected as being representative of important components of the reading act.

Enumeration of the Selected Basal Reading Skills

Listed below are the 50 basal reading skills which were selected for study. They are organized by six categories.

Identifying Words at Sight. -- Only one skill was selected from this category. The skill had the same label as the category.

Phonetic Analysis Skills. -- Nine skills were selected from this category: associating vowel letters and sounds; associating consonant letters and sounds; associating consonant digraphs and sounds; associating consonant blends and sounds; using spelling patterns; identifying syllables in orally and visually presented short words; identifying syllables in orally and visually presented long words; identifying syllables in visually presented short words; identifying syllables in visually presented long words.

Structural Analysis Skills. -- Seven skills were selected from this category: identifying components of compounds; identifying roots, endings, and suffixes; identifying roots and prefixes; identifying roots and multiple affixes; translating contractions; locating roots by using root-change rules; changing roots by using root-change rules.

Dictionary Skills. -- Ten dictionary skills were selected: identifying alphabetical sequences based on first letter; identifying alphabetical sequences based on third letter; identifying alphabetical sequences based on first, second, or third letter; using dictionary guide words; finding definitions of single entry words; finding definitions of multiple entry words; selecting definitions of single entry words; selecting definitions of multiple entry words; interpreting single pronunciation symbols; interpreting multiple pronunciation symbols.

Word Functions Skills. -- Eight skills were selected from this category: recognizing functions of nouns; recognizing functions of verbs; recognizing functions of adjectives; recognizing functions of adverbs; specifying functions of nouns; specifying functions of verbs; specifying functions of adjectives; specifying functions of adverbs.

Comprehension Skills. -- Fifteen comprehension skills were chosen: identifying cause-effect relationships directly stated in sentences; identifying cause-effect relationships implied in sentences; identifying main ideas directly stated in stories; identifying main ideas implied in stories; identifying main ideas directly stated in paragraphs; identifying main ideas implied in paragraphs; identifying details in stories; interpreting similes; interpreting idioms; interpreting hyperboles; interpreting personification; interpreting metaphors; predicting outcomes and actions; discriminating between fact and fiction; discriminating between fact and opinion.

Selection of the Intellectual Processes

A sample of four intellectual processes was chosen for use in the study of intellectual processes related to the basal reading skills. The material below consists of a description of steps used in selecting these intellectual processes and an enumeration of the intellectual processes chosen.

Steps in Selection of the Intellectual Processes

Three steps were involved in selecting the tests of the intellectual processes. These steps are listed below.

Examining Operational Definitions. -- The first step was to examine the operational definitions of the basal reading skills.

Posing Expectations. -- The second step was to pose expectations about the intellectual processes possibly involved in achievement of these basal reading skills.

Selecting Intellectual Processes. -- The third step was to select intellectual processes. These were chosen from the intellectual processes which were judged to be possibly relevant on the basis of behavior identified in the operational definitions of the basal reading skills[1]. Four intellectual processes finally were selected.

Enumeration of the Selected Intellectual Processes

Four intellectual processes were chosen for use in the investigation. These intellectual processes were associative memory, conceptualization, grasping verbal meaning, and reasoning.

The Basal Reading Program

The instructional program used in the study is described in this section. The core materials were those making up the Scott, Foresman New Basic Readers series. This report describes these materials, the supplementary materials used, the general guides for instruction, the classroom organizational patterns of participating classes, and the skills taught in the Scott, Foresman materials. The orientation in-service activities for project teachers are described in the next section.

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[1] In addition, the investigators considered several other issues before making decisions about the nature and number of the intellectual processes selected for study. These issues pertained primarily to the following: the extent of cognitive differentation occurring in individuals at the younger MAs; difficulties in interpreting effects of large numbers of independent variables in the absence of the reification required for indices obtained in factor analysis, variance component analysis, and similar procedures; diminishing returns which occur in multiple correlation procedures involving more than four or five variables; and ambiguity which may occur in multiple regression as a function of heterogeneous (between equations) intercorrelations among independent variables in a set and between independent variables in a set and the dependent variable. For a discussion of these issues, see Cronbach (1960), Guilford (1965), Ghiselli (1964), McNemar (1962), Snedecor (1956), and Sparks and Mitzell (1966).

Information is based upon summary reports compiled by teachers, mimeographed sheets prepared for briefing project teachers, discussions with teachers, classroom observations by project workers, and a study of instructional materials used in the project.

A part of this research study involved comparing achievement in basal reading skills by retarded and normal children and by normal and superior children who were being taught on corresponding reading instructional levels. For these comparisons to be valid, the reading programs of the children in the participating classrooms had to be similar in nature, in so far as similarity is possible and desirable in natural school settings. When more than one teacher is involved in an experimental study, as was the case in this research project, complete uniformity of instruction from classroom to classroom is an impossibility. Such uniformity, even if it were possible, would not be desirable from the standpoint of good instructional methodology.

To achieve the desired degree of standardization within each reading instructional level, the investigators prepared some general guides for instruction and selected a core reading program, the Scott, Foresman New Basic Readers series, to be used by all participating teachers. In so far as possible, the researchers attempted to control the general content and the instructional time in reading so that children from the intellectually superior, normal, and retarded groups who were being instructed on the same levels would have reasonably comparable programs. All teachers followed the general project instructional guides and the guidebook lesson plans to achieve similarity from instructional group to instructional group. Each teacher, however, varied her rate of coverage of materials in terms of the progress of her children.

Basic Reading Program. -- The Scott, Foresman New Basic Readers program was selected for use in the project. This series of readers is one of eleven different series on the Georgia Textbook List that may be purchased by Georgia schools from their textbook fund allotments.

A series of basic readers is designed to serve as a core part of a developmental reading program. Through collections of stories and articles arranged in accordance with levels of difficulty, as determined by readability formulas, the series offers a sequence for the fundamental or basal skills of reading. The sequence is presented in lesson plans contained within the teacher's guidebook. Skill placement is based in part on the master skills-blueprint for the series and in part on the content of the selections. In so far as it is possible, skills suggested for a given lesson plan are tied to the selection being taught.

The Scott, Foresman New Basic Readers series consists of graded materials from the pre-reading readiness stage through eighth grade reading level. At the time project work in the schools was initiated, materials were available only through grade 6. Though only grades 2 through 5 reading levels were of concern in the present study, materials from grades 1 through 6 were furnished teachers in accordance with the reading levels of their children. Grade 6 reading level materials permitted good readers starting at level 5 to progress to a higher level before the end of the year.

Teachers were furnished necessary teaching materials, such as reading texts, workbooks, guidebooks, and accessory materials for each instructional level to be taught in the classroom. Accessory materials included supplementary readers at primary grade levels, picture dictionaries for first and second grades, dictionaries for third grade and up, and anthologies of children's literature. Though the Scott, Foresman reading program includes text materials designed especially for children reading above and children reading below grade level, only the regular text materials were used. The materials for the superior and the poor readers were not available at all grade levels at the time the project began. Still another reason for not using them had they been available is that the instructional program could be kept more uniform from group to group by using the regular levels only. Using only the regular levels created a situation more like that followed in most school settings.

Teachers were asked to follow the skill sequence suggested in the guidebook for introducing skills at a particular reading difficulty level. Where suggested practice materials given in the teacher's guidebook and in the workbook were insufficient according to the teacher's judgment, he or she was encouraged to prepare or find practice materials for use with the children. By following the Scott, Foresman sequence for skill introduction, the different teachers tended to standardize their core reading program.

Supplementary Materials. -- No basal reading series is complete within itself. Additional materials are needed to permit children to put into practice skills taught them in basal reading instructional materials, and occasionally guidebooks will not suggest enough in the way of practice on skills that have been introduced, thus necessitating the use of additional materials. Project teachers were encouraged to use library books and other materials on appropriate levels for their children. Among the supplementary materials used by teachers were these: library books, other basal readers used for supplementary reading, high-interest low-vocabulary books, special workbooks, teacher-prepared exercises, and reading laboratories. All classrooms appeared to have sufficient quantity and variety of supplementary materials, and the specific types used were typical of those in Georgia classrooms.

Guides for Teaching Basal Reading Effectively. -- The need for similar programs of reading instruction for children in the project who were reading on the same levels was stressed in the briefing sessions with project teachers. As will be discussed later in detail, a series of eight in-service sessions was held with participating teachers. At the second of these meetings, a portion of the time was devoted to presenting guides for effective reading instruction. Mimeographed copies of the suggested guides were furnished the teachers for further assistance. The guidelines dealt with instructional time, use of basal readers, use of guidebooks, teaching the directed reading lesson, and use of the accompanying workbooks. The 18 guidelines are included in Appendix D.

Suggestions presented in the 18 guidelines are in line with those most often given by persons working with pre-service and in-service groups of teachers who are concerned with good teaching of developmental reading. They permit teacher freedom for creative teaching within the broad framework of the skill sequence of the Scott, Foresman series and yet suggest ways for the teacher to assure effective use of a basal series of readers in a developmental reading program.

Classroom Organizational Pattern. -- No attempt was made to standardize the pattern of classroom organization. Since three different school systems were involved in the study, complete standardization would have been impossible to accomplish. Teachers were asked to adhere to the general guidelines of instruction and to teach children on their instructional levels, as indicated by the Georgia Informal Reading Inventory: Form SF, an individual reading inventory given to project children. Teachers were also asked to adhere to a general time schedule so that the amount of actual instruction time spent on reading by each project teacher would be approximately the same.

Though efforts were not expended to assure uniformity in organizational pattern, a high degree of sameness existed in the pattern of classroom organization. In the school system from which most subjects came, a three-track organizational plan is used, with children being divided throughout the elementary grades in accordance with their academic achievement. Within the individual classrooms in the primary grades, sub-grouping for reading instruction was the rule. One second grade and one fourth grade were in a team-teaching situation, and most of the mentally retarded children were in conventional exceptional child units which met the standards of the Georgia State Department of Education. Intermediate grade classes in this system were set up on a departmentalized basis or employed grouping across classes for reading instruction. In all instances, efforts were made to teach children on the levels at which they were reading.

In the second school system, children had been randomly assigned to the teachers within each grade and, with the exception of two teachers, were taught in sub-groups within the regular classroom. Two teachers grouped across classes for reading instruction.

The third school system contributed mentally retarded children only, and these were taught by using grouping across classes.

Time Spent in Basal Reading Instruction. -- Though rigid time control is neither desirable nor possible in classroom reading instruction, some standardization of time was necessary in this project. The major focus of one part of the project was to investigate rates and levels of achievement of intellectually superior, intellectually normal, and mentally retarded children as well as processes and sequences. Therefore, approximately the same amount of time had to be spent in reading instruction for those children reading on the same instructional level.

The following daily time allotments were used as guides for teachers participating in the study:

1 1/2 hours for children reading on primary level;

1 1/4 hours for children reading on intermediate level.

Though allotments were given on a daily basis, teachers considered their weekly schedule in order to permit day-to-day variation as needed.

The suggested time allotments included actual instruction time when the teacher was working directly with a particular group of children and time for independent reading activities connected with basal reading. Most teachers had sub-groups operating within their classrooms, and many reading activities planned for these children did not require direct teacher supervision for every minute of the instructional period. All children, however, spent approximately 1 1/4 to 1 1/2 hours daily in basal reading activities.

Scott, Foresman Skill Development Program. -- To interpret the achievement of the childrens' reading on the various levels in this study, some knowledge of the skill development program of the Scott, Foresman series is necessary. Certain of the skills measured were not actually introduced in instruction until the third reader level, whereas other skills were introduced as early as the pre-primer reading level in the Scott, Foresman skill sequence. For this reason, the sequence of the program as well as its inclusiveness is important in interpreting the results of the study.

The 50 skills sampled in this study constitute a sampling across the spectrum of skills which was designed to include some of most types of skills. To include all skills was impossible because of the testing time that would have been necessary.

The Scott, Foresman index of skills subdivides the reading skills into the two broad and overlapping categories of word perception and interpretation. For convenience in this study, the skills have been categorized into groups. These categories are sight vocabulary (1 skill), phonetic analysis (9 skills), structural analysis (7 skills), dictionary use (10 skills), word functions (8 skills), and comprehension (15 skills). The first five of these categories correspond to skills included in Scott, Foresman's word perception skills, and the skills in the final group are similar to skills included in the Scott, Foresman interpretation skills. Each skill measured in the study and then the Scott, Foresman skills that are comparable are presented in Appendix E.

Orientation and In-service Program for Teachers

Objectives. -- The investigators planned and carried out a series of meetings for participating teachers. These activities involved eight sessions designed to accomplish the following objectives:

1. To orient teachers on the nature of the research project

2. To insure that participating teachers used Scott, Foresman basal readers and accessory materials in an effective manner

3. To assure, in so far as possible, that time allotments and teaching procedures were uniform within the participating classes

4. To brief teachers on research tests and test administration

5. To maintain regular contact with teachers during the project in order that current information about the project could be given and further questions about the project might be answered

Schedule and Content of Meetings. -- Project investigators, with the help of two consultants at the fourth and fifth sessions, planned and carried out the in-service programs for participating teachers. Meetings began in late August, the week prior to school opening, and concluded in late April. With the exception of one five-hour and one eight-hour meeting, sessions lasted for three hours each. Figure 1 gives the content of each meeting and when it was held.

Six of the eight sessions were scheduled individually for each of the three participating school systems. The fifth and sixth meetings, those in which outside consultants participated, were held at central points for all participating teachers. Enrollment in the meetings coincided with the number of teachers participating in the study. One group had five teachers, another group, six teachers, and the third group, twenty-eight teachers.

To assure uniformity of presentation from school system to school system, detailed written materials containing the ideas to be discussed with participants were prepared in advance and were mimeographed. These materials were followed rather closely in conducting in-service activities with the teachers, and copies of the materials were given to teachers to use during the meeting and to keep for further reference.

Figure 1

Orientation and In-service Program for Teachers

Meeting	Topics discussed	Month
1	Purpose of project Teaching approach to be used Tests to be used	August
2	Organizing for effective instruction How to teach a lesson in a basal reader How to use supplementary materials Time schedule	September
3	Reading tests to be administered in fall and spring	October
4	Word perception skills	November
5	Using Scott, Foresman materials effectively	December
6	Philosophy underlying Scott, Foresman program	January
7	Comprehension skills Processes tests and additional reading tests	March
8	Project evaluation	April

Tests

As stated previously, 50 basal reading skills were selected from the total set of skills taught in the Scott, Foresman New Basic Readers program. Similarly, four intellectual processes were selected from the set of possibly relevant intellectual processes. The instruments used to assess these skills and processes are con sidered below in terms of three topics: development of the tests, description of the basal reading tests, and description of the intellectual processes tests.

Development of the Tests

Strategy. -- In obtaining materials for assessing the basal reading skills and intellectual processes chosen for study, the investigators had to make decisions about three issues: whether to use presently published intellectual processes tests or whether to develop intellectual processes tests; whether to use presently published standardized reading tests or whether to develop reading tests; in the study of rate of acquisition during the 7-month instructional period, whether to administer one set of reading tests twice or whether to use single administrations of two alternate forms of reading tests. The ways these issues were resolved are described below.

1. In deciding about the intellectual processes tests, content analyses were made of standardized and non-standardized tests. The investigators did not find tests which were appropriate in terms of particular requirements of the present project. Consequently, four previously-used tests designed for measuring the intellectual processes chosen for study were selected from sources like French, Ekstrom, and Price (1963) and modified, as appropriate, for use in the present project.

2. In deciding about the reading tests, content analyses were made of standardized and non-standardized reading tests. These tests, while appropriate for other purposes, were not appropriate in terms of particular requirements for the present project. Therefore, the investigators developed tests to assess the 50 basal reading skills selected for study. In the test development, items were selected primarily in terms of the operational definitions of the basal reading skills being assessed and the reading instructional levels at which the skills were introduced and reviewed.

3. In deciding about alternate forms versus a single form of the tests, the following factors were among those considered. In the study of rate of acquisition, seven months elapsed between the two testing periods. Taking as a model the procedures suggested by authors of such tests as the Stanford-Binet (Terman and Merrill, 1960), it was considered that a 6-month interval was a sufficient period to minimize the effects of such confounding influences as memory, practice effect, etc.,.which can operate

if the same tests are administered twice. In addition, there were problems with alternate forms. An extensive amount of time and work would have been involved in developing parallel forms of reading tests which were satisfactory in terms of length, content validity, reliability, etc. Similarly, the number of activities involved in preparing two alternate sets of test materials for 1163 pupils as well as alternate sets of test administration materials, including audio tapes, would have constituted serious logistical problems as well as increased possibilities that procedural errors could have occurred. Since only a given amount of time and resources were available, the large amount of work involved in developing alternate forms and preparing them for use with teachers and pupils would have required a reduction in the number of basal reading skills examined. And so, considering factors such as these, the investigators chose to use the more extensive sample of basal reading skills and to depend on the time interval between testing periods to help in minimizing the effects of possible bias in using the same forms of tests twice in the study of rate of acquisition.

Pilot-testing and Revision. -- After preliminary forms of the instruments were developed, they were pilot-tested in 10 classes of elementary school pupils[1]. In addition, teachers of the pilot-test sample were asked to write evaluative comments about the tests. The evaluation requested of the teachers referred to content validity, format, and clarity of directions and procedures. Also, the teachers were asked to report the time required for the majority of the pupils in each class to finish the tests.

The pupils' scores on the pilot tests were used in computing reliability estimates and other appropriate item and test statistics. In addition, the teachers' evaluations of the tests were summarized.

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[1] These pupils were from the Franklin County (Georgia) School System and the Clarke County (Georgia) School System. They participated only in the pilot-testing. They did not participate in the later stages of the project.

The tests were revised on the basis of the results of the pilot testing, the evaluations of the teachers, and further examinations by the investigators. In addition, time allotments were set for each test on the basis of the information supplied by the teachers who administered the pilot tests. The time allotments were considered generous enough to provide a measure of power rather than speed on all tests except #18. On test #18, Sight Vocabulary, a speeded presentation was used to minimize the subjects' use of phonetic analysis or structural analysis.

With the intention of holding test directions constant among classes and reducing the burden of test administration for teachers, all of the test administration directions were recorded on audio tape as well as in mimeographed form. Also recorded on audio tape were the test items, or content per se, for the several tests involving auditory stimuli. These tests included #10, Phonics Sounds; #11, Phonics Principles; and #13, Finding Syllables--Auditory. In addition, tape recordings were made of stimuli in the intellectual processes tests which required reading. That is, in order to avoid confounding the measures of the given intellectual processes with ability to read, audio recordings were used in presenting stimuli for three tests: IP.1, Word Grouping; IP.2, Word Number; and IP.3, Word Meaning. (The stimulus materials for IP.4, Number Series, did not require reading, per se.)

Reliability Data for the Revised Instruments. -- Reliability data for the revised instruments were obtained in this way. The data used in estimating score reliability were scores attained by subjects in the processes-sequences group on the fall administration of tests #1 - #17 and their scores on tests #18, #19, and #20.

The reliability coefficients were calculated by a split-half method and corrected by the Spearman-Brown Prophecy Formula. The reliability data are presented in the next section: specifically, the respective reliability coefficients are presented in the descriptions of the tests or subtests used to measure the reading skills

and intellectual processes. Appendix F contains a tabular summary of the reliability coefficients. Generally, on the basis of their examination of the reliability data, the investigators judged that the reliabilities of the scores were sufficiently high to justify use of the scores for research purposes. The distinction between scores being used for research purposes and for other purposes followed from Thorndike's (1951) discussion of relevant considerations.

Description of the Basal Reading Tests

Twenty tests were used to assess the 50 basal reading skills selected for study. Most of these tests consisted of several subtests specific to certain basal reading skills. The tests and subtests are described briefly below. These descriptions are presented by basal reading skill. They include the definition of the basal reading skill, the instructional span for the skill, the name of the test or subtest, the description of the items used to measure the skill, the total possible score, and the reliability coefficient for the score.. Appendix G consists of a summary outline of some of these items: name of skill, name of score, instructional span, and total possible score.

Appendices H through M, respectively, contain materials for the tests in the six categories of basal reading skills. Each appendix includes content descriptions of the tests and subtests used to measure the several basal reading skills; as well as specimens of the tests--the directions and procedures for the teachers, the directions for the subjects, and the sets of test items to which the subjects responded[1].

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[1]Pertinent here are two comments about mechanics relevant to the appendices containing tests. First, among other uses, the material in the content descriptions is intended for use in identifying specific test items which were included in the several subtests and tests. Second, because of space requirements in the final report, the specimen test materials presented in the appendices are in smaller type and are more compressed than the test materials used with the pupils. Also, specimen test materials appear on the fronts and the backs of pages; test materials used with subjects were presented on only one side of a page.

Identifying Words at Sight

Test materials are in Appendix H.

This skill involves recognizing and pronouncing words presented visually by means of a rapid exposure device. The skill is introduced at the preprimer level and continued through reading instructional level 6. The skill was measured in test 18, Sight Vocabulary. The test consisted of 48 items. Eight words which were not inflected, derived, or compounded forms were selected from word-lists or glossaries of books at each reading instructional level 1 through 6. Thus, the total possible score was 48. The reliability coefficient was .95.

Phonetic Analysis Skills

Appendix I contains materials used in the tests of skills in this category.

Associating Vowel Letters and Sounds. -- This skill involves associating vowel letters and sounds when sounds are presented in isolation. The skill is introduced in the instructional program at reading instructional level 2^1 and reviewed through 3^2. The skill was measured by subtest 10.1, Phonics Sounds: Vowels. The subtest consisted of items sampling the long and short sounds for each of the five vowels. The total possible score was 10. The reliability coefficient for the subtest was .42.

Associating Consonant Letters and Sounds. -- This skill involves associating consonant letters and sounds when sounds are presented in isolation. In the reading instructional program, the skill is introduced at the preprimer level and reviewed at subsequent levels to reading instructional level 3^2. The subtest used to assess this skill was 10.2, Phonics Sounds: Single Consonants. The consonant sounds sampled in the subtest were g (hard g), m, r, h, s, y, c (s), w, l, n, g (j), c (k), p, v, k, t, d, f, j, and b. The total possible score was 20. The reliability coefficient for the subtest was .69.

Associating Consonant Digraphs and Sounds. -- This skill involves associating consonant digraphs and sounds when sounds are presented in isolation. The skill is introduced at reading instructional level 1 and reviewed at reading instructional levels 2^1 and 3^1. The skill was examined in subtest number 10.3, Phonics Sounds: Consonant Digraphs. The digraphs included in the test were gn, th (voiced), ph, ch, th (voiceless), and wh. The total possible score was 6. The reliability coefficient for the subtest was .73.

Associating Consonant Blends and Sounds. -- This skill involves associating consonant blends and sounds when sounds are presented in isolation. The skill is presented at reading instructional level 1 and reviewed at reading instructional levels 2^1 and 3^1. The subtest, 10.8, Phonics Sounds: Consonant Blends, included eight r-blends, six l-blends, six s-blends, and two miscellaneous blends (tw, qu). The total possible score was 22. The reliability coefficient for the subtest was .98.

Using Spelling Patterns. -- This skill involves using consonant-vowel-consonant spelling patterns as clues to pronouncing vowel sounds in one-syllable words, polysyllabic words with accented first syllables, and polysyllabic words with accented final syllables. The skill is introduced at reading instructional levels 2^1 and 3^1 and reviewed at each subsequent reading instructional level to 6. The test used to examine this skill was 11.3, Phonics Principles. Eleven rules were sampled. The total possible score was 34. The reliability coefficient for the test was .87.

Identifying Syllables in Orally and Visually Presented Short Words. -- This skill involves identifying syllables in words consisting of three syllables or less, presented both visually and orally. The skill is introduced at reading instructional level 3^1 and reviewed at reading instructional levels 3^2, 5, and 6. The skill was measured by subtest 13.1, Finding Syllables--Auditory: 1- to 3-Syllable Words. The subtest included six one-syllable words, six two-syllable words, and four three-syllable words. The total possible score was 16. The reliability coefficient for the subtest was .88.

Identifying Syllables in Orally and Visually Presented Long Words. -- This skill involves identifying syllables in words consisting of four or more syllables presented both visually and orally. In the instructional program, the skill is introduced at the 3^1 level and reviewed at reading instructional levels 3^2, 5, and 6. The subtest used to assess the skill was 13.2, Finding Syllables--Auditory: 4- to 6-Syllable Words. Included in the subtest were six four-syllable words, four five-syllable words, and six six-syllable words. The total possible score was 16. The reliability coefficient for the subtest was .92.

Identifying Syllables in Visually Presented Short Words. -- This skill involves identifying syllables in words consisting of three syllables or less presented visually, but not orally. The skill is introduced at reading instructional level 3^1 and reviewed at reading instructional levels 3^2, 5, and 6. The subtest was 12.1, Finding Syllables--Visual: 1- to 3-Syllable Words. The test consisted of six one-syllable words, six two-syllable words, and four three-syllable words. The total possible score was 16. The reliability coefficient for the subtest was .88.

Identifying Syllables in Visually Presented Long Words. -- This skill involves identifying syllables in words consisting of four or more syllables presented visually, but not orally. In the instructional program, the skill is introduced at the 3^1 level and reviewed at reading instructional levels 3^2, 5, and 6. The name of the subtest used was 12.2, Finding Syllables--Visual: 4- to 6-Syllable Words. The subtest contained six four-syllable words, four five-syllable words, and six six-syllable words. The total possible score was 16. The reliability coefficient for the subtest was .91.

Structural Analysis Skills

Test materials are presented in Appendix J.

Identifying Components of Compounds. -- This skill involves identifying component parts of compound words. The actual skill of locating root words in compounds is introduced at reading instructional level 1 and reviewed at each reading instructional level to 6. The reviews at reading instructional levels 5 and 6 are optional. The test used to examine this skill was 3.1, Finding Roots in Compounds. The test consisted of 24 compound words; four compound words were selected from the set of compound words introduced at each reading instructional level 1 through 6. The total possible score was 24. The reliability coefficient for the test was .96.

Identifying Roots, Endings, and Suffixes. -- This skill involves identifying root words, endings, and suffixes in complex words which do not involve spelling changes in the roots. The subtest was 4.1, Finding Roots in Inflected and Derived Forms: No Root Change. The six endings and suffixes sampled were -ed, -ly, -less, -ion, -ize, and -ee. These elements were selected from the sets of endings and suffixes introduced respectively at reading instructional levels primer through 6 one element per reading instructional level. The root words were selected from the reading instructional level immediately preceding the level at which the ending or suffix was introduced. In the instructional program, the root words and affixes are reviewed at reading instructional levels subsequent to the levels at which they are introduced. The test included 12 items; two items represented each of the six endings or suffixes. The total possible score was 12. The reliability coefficient for the subtest was .75.

Identifying Roots and Prefixes. -- This skill involves identifying root words and prefixes in derived forms which do not involve spelling changes in the roots. The subtest was 4.2, Finding Roots in Inflected and Derived Forms: Prefixes. Five prefixes were used: un-, re-, over-, sub-, and mis-. That is, one prefix was selected from each set of prefixes introduced at the respective reading instructional levels 2, 3, 4, 5, and 6. The root words were selected from words introduced

at reading instructional levels preceding the reading instructional level where a particular prefix was introduced. Two items were used for each prefix. Consequently, the test consisted of 10 items and the total possible score was 10. The reliability coefficient for the subtest was .95.

Identifying Roots and Multiple Affixes. -- This skill involves identifying roots, prefixes, suffixes, and endings in words with multiple affixes, with some words involving spelling changes. The subtest was 4.4, Finding Roots in Inflected and Derived Forms: More Than One Affix. The skill of dealing with derivatives which have more than one affix is introduced at reading instructional level 2 and reviewed at subsequent reading instructional levels through 6. The subtest consisted of four sets of affixes. Each set was represented by two test items. Thus, the total possible score was 8. The reliability coefficient for the subtest was .84.

Translating Contractions. -- This skill involves translating contractions into component words. Generally, the several categories of contractions are introduced at reading instructional levels 1, 2^{-}, and $2^{=}$. Subsequently, the skill, translating contractions, is reviewed at reading instructional levels 3, 4, 5, and 6. The reviews at reading instructional levels 4 and 5 are optional. The test was 2.1, Meaning of Contractions. The 12 test items sampled four categories of contractions: one letter omitted, two letters omitted, more than two letters omitted, and internal spelling or pronunciation change. The total possible score was 12. The reliability coefficient for the test was .94.

Locating Roots by Using Root-change Rules. -- This skill involves using rules for root changes to locate root words in inflected and derived forms in which spelling changes occur. The subtest was 4.3, Finding Roots in Inflected and Derived Forms: Root Changes. Seven rules were examined. These rules are introduced at levels 2^{1}, 2^{2}, and 3^{1} in the instructional program. They are reviewed at the instructional levels subsequent to the levels at which they are introduced. The reviews at reading instructional levels 4 and 5 are optional. The subtest consisted of 14 items, 2 items per rule; thus, the total possible score was 14. The reliability coefficient for the subtest was .95. No foils were used for a particular reason. The subtest was combined with subtests involving locating prefixes, endings, and suffixes, all presented in the format of identifying the roots and affixes in complex words. Consequently, the various parts of the test served as foils for each other.

Changing Roots by Using Root-change Rules. -- This skill involves applying rules for changes in root words when adding endings and suffixes to make inflected and derived forms. The rules are introduced in the reading instructional program at the 2^{1}, 2^{2}, and 3^{1} levels, and are reviewed at the instructional levels subsequent to the levels at which they are introduced. The reviews at reading instructional levels 4 and

5 are optional. The subtest was 1.1, Adding Endings or Suffixes: Root Changes. Seven rules were examined. These were the same rules examined on the above-described subtest 4.3, Finding Roots in Inflected and Derived Forms: Root Changes. Two test items were used to assess each rule. Consequently, the total possible score was 14. The reliability coefficient was .94. The test also included 14 foils. These foils were items which involved the same suffixes or endings as the criterion items, but they did not involve root changes. The test score does not include subjects' responses to the foils.

Dictionary Skills

Appendix K contains the materials for the tests.

Identifying Alphabetical Sequences Based on First Letter. -- This skill involves identifying alphabetical sequences of words ordered by first letter. In the instructional program, the alphabetizing skill is introduced at reading instructional level 2^{2}. The skill is reviewed at each subsequent reading instructional level through 6 with the reviews at reading instructional levels 5 and 6 being optional. The skill was measured by subtest 5.1, Alphabetizing Words: By First Letter. The subtest consisted of two series of words to be ordered; each series included six words. The total possible score was 12. The reliability coefficient for the subtest was .64.

Identifying Alphabetical Sequences Based on Third Letter. -- This skill involves identifying alphabetical sequences of words ordered by third letter; that is, the first two letters of the words are the same and the words are ordered by the third letter. The skill is introduced at the 2^{2} level in the reading instructional program and reviewed at each subsequent reading instructional level through 6. The reviews at reading instructional levels 5 and 6 are optional. Subtest 5.2, Alphabetizing Words: By Third Letter was used to assess the skill. The subtest contained two lists of words. Each list included six words. The total possible score was 12. The reliability coefficient for the subtest was .71.

Identifying Alphabetical Sequences Based on First, Second, or Third Letter. -- This skill involves identifying alphabetical sequences of words ordered by first letter, second letter (with the first letter being the same), or by third letter (with the first two letters being the same). The skill is introduced in the reading instructional program at the 2^{2} level and reviewed at each subsequent level; the reviews at reading instructional levels 5 and 6 are optional. The subtest used to assess this skill was 5.3, Alphabetizing Words: By First, Second, or Third Letter. There were two lists of words in the subtest. Each list included six words. The total possible score was 12. The reliability coefficient for the subtest was .76.

Using Dictionary Guide Words. -- This skill involves knowing the function of and using dictionary guide words. In the instructional program, this skill is introduced at reading instructional level 3^1 and reviewed at reading instructional levels 3^2, 4, 5, and 6. The skill was assessed by test #6, Dictionary Guide Words. The test consisted of 30 items. In 12 items, use was based on the second and third letters of the guide words; in another 12 items, on the third and fourth letters of the guide words. The total possible score was 30. The reliability coefficient was .73. Six items were foils.

Finding Definitions of Single Entry Words. -- This skill involves using a glossary for locating definitions of words which have single entries and multiple meanings listed. In the instructional program, the skill is introduced at the 3^1 level and reviewed at reading instructional levels 3^2, 5, and 6. The subtest was 7.1, Finding Definitions: Single Entry Words. The subtest consisted of six words for which both the entry number and meaning number had to be designated. The total possible score was 12. The reliability coefficient for the subtest was .89.

Finding Definitions of Multiple Entry Words. -- This skill involves using a glossary for locating definitions of words which have multiple entries and multiple meanings listed. The skill is introduced at reading instructional level 3^1 and reviewed at reading instructional levels 3^2, 5, and 6. The subtest was 7.2, Finding Definitions: Multiple Entry Words. There were eight words in the test; the entry number and the meaning number of each word had to be designated. The total possible score was 16. The reliability coefficient for the subtest was .82.

Selecting Definitions of Single Entry Words. -- This skill involves selecting glossary definitions which are appropriate substitutes for words in the context of sentences; the words have single entries and multiple meanings. The skill is introduced at reading instructional level 3^2 and reviewed at reading instructional levels 5 and 6. The subtest was 8.1, Selecting Definitions: Single Entry Words. The subtest consisted of eight items for which the entry number and the meaning number had to be designated. The total possible score was 16. The reliability coefficient for the subtest was .89.

Selecting Definitions of Multiple Entry Words. -- This skill involves selecting glossary definitions which are appropriate substitutes for words in the content of sentences; the words have multiple entries and multiple meanings. In the instructional program, the skill is introduced at reading instructional level 3^2 and reviewed at reading instructional levels 5 and 6. The subtest for the skill was 8.2, Selecting Definitions: Multiple Entry Words. The subtest consisted of six items for which the entry number and the meaning number had to be designated. The total possible score was 12. The reliability coefficient for the subtest was .76.

Interpreting Single Pronunciation Symbols. -- This skill involves interpreting pronunciation symbols for vowel sounds in words in which one symbol is used. This skill is introduced at the 3^1 instructional level and reviewed at each subsequent reading instructional level to 6. The subtest was 9.1, Pronunciation Symbols: Single Symbols. The subtest consisted of 16 items: the five vowels, the symbols for the short sounds, the long sounds, the r-controlled sounds (except ur and ir which are the same as er); and the symbols for the ã, ü, and schwa sounds. The total possible score was 16. The reliability coefficient for the subtest was .82.

Interpreting Multiple Pronunciation Symbols. -- This skill involves interpreting pronunciation symbols for vowel sounds in words in which three or four symbols are used. In the instructional program, this skill is introduced at the 3^1 level and reviewed at each subsequent reading instructional level to 6. The subtest was 9.2, Pronunciation Symbols: Multiple Symbols. The subtest consisted of eight words. The symbols were combinations of symbols for the short, long, and r-controlled vowel sounds along with the ã and schwa sounds. The total possible score was 8. The reliability coefficient for the subtest was .73.

Word Functions Skills

The test materials for the word functions skills are in Appendix L.

Recognizing Functions of Nouns. -- This skill involves recognizing the functions of words and phrases which serve as nominals in sentences. The skill is introduced at the preprimer level of the reading instructional program and reviewed at each subsequent instructional level to 6. The skill was examined in subtest 14.1, Word Group Identification: Nouns. The subtest consisted of 12 items. That is, nouns were embedded in two sentences selected from each reading instructional level from 1 to 6. The total possible score was 12. The reliability coefficient for the subtest was .75.

Recognizing Functions of Verbs. -- This skill involves recognizing the functions of words and phrases which serve as verbs in sentences. The skill is introduced at the preprimer level; it is reviewed at each subsequent reading instructional level to 6. The subtest was 14.2, Word Group Identification: Verbs. Twelve items composed the subtest. Two sentences were selected from each reading instructional level from 1 through 6. The total possible score was 12. The reliability coefficient for the subtest was .81.

Recognizing Functions of Adjectives. -- This skill involves recognizing functions of words and phrases which serve as adjectives in sentences. The skill's instructional span is preprimer through 6.

The name of the subtest was 14.3, Word Group Identification: Adjectives. Two sentences were taken from the respective reading instructional levels 1 through 6; the test, therefore, included 12 items and had a total possible score of 12. The reliability coefficient for the subtest was .76.

Recognizing Functions of Adverbs. -- This skill involves recognizing the functions of words and phrases which serve as adverbs in sentences. The skill is introduced at the preprimer reading instructional level and reviewed at each subsequent reading instructional level to 6. The subtest used to measure this skill was 14.4, Word Group Identification: Adverbs. The subtest consisted of 12 items, two sentences from each of the six reading instructional levels. The total possible score was 12. The reliability coefficient for the subtest was .76.

Specifying Functions of Nouns. -- This skill involves specifying that nouns are the form class which will function in given sentence contexts. The skill is introduced at the preprimer level and reviewed at each subsequent reading instructional level to 6. The subtest was 15.1, Word Group Anticipation: Nouns. The subtest included 12 items; two sentences were selected from each reading instructional level from 1 through 6. The total possible score was 12. The reliability coefficient for the subtest was .60.

Specifying Functions of Verbs. -- This skill involves specifying that verbs are the form class which will function in given sentence contexts. The skill's instructional span is preprimer through 6. The skill was examined by subtest 15.2, Word Group Anticipation: Verbs. Twelve items were in the subtest; that is, two items were selected from each reading instructional level. The total possible score was 12. The reliability coefficient for the subtest was .75.

Specifying Functions of Adjectives. -- This skill encompasses facility in specifying that adjectives are the form class which will function in given sentence contexts. The skill is introduced at the preprimer level and then reviewed at each subsequent instructional level to 6. The subtest was 15.3, Word Group Anticipation: Adjectives. It included 12 items; two sentences were taken from each of the six reading instructional levels. The total possible score was 12. The reliability coefficient for the subtest was .60.

Specifying Functions of Adverbs. -- This skill involves specifying that adverbs are the form class which will function in given sentence contexts. The instructional span is reading instructional levels preprimer through 6. The subtest was 15.4, Word Group Anticipation: Adverbs. Two sentences were selected from each reading instructional level 1 through 6; the subtest contained 12 items and had a total possible score of 12. The reliability coefficient for the subtest was .50.

Comprehension Skills

Appendix M contains the tests for the comprehension skills.

Identifying Cause-effect Relationships Directly Stated in Sentences. -- This skill involves identifying directly-stated ideas presented through sentences; the ideas are cause-effect relationships. The instructional span is preprimer through 6. The subtest was 16.1, Sentence Meaning: Direct Statement. Twelve items were in the subtest; two sentences were selected from each reading instructional level between 1 and 6. The total possible score was 12. The reliability coefficient for the subtest was .67.

Identifying Main Ideas Directly Stated in Paragraphs. -- This skill involves identifying main ideas which are directly stated in paragraphs. The skill is introduced at the preprimer level of the instructional program and taught at each level through 6. The subtest was 17.3, Paragraph Meaning: Main Idea--Paragraph. The subtest included 12 items; two from material selected to represent each reading instructional level 1 through 6. The total possible score was 12. The reliability coefficient for the subtest was .79.

Identifying Main Ideas Directly Stated in Stories. -- This skill involves identifying main ideas which are directly stated in stories. The skill is introduced at the preprimer level and reviewed at each subsequent reading instructional level to 6. The subtest was 17.1, Paragraph Meaning: Main Idea--Story. Two stories were selected to reflect the difficulty level at each reading instructional level from 1 to 6; consequently, the test consisted of 12 items and had a total possible score of 12. The reliability coefficient for the subtest was .59.

Identifying Cause-affect Relationships Implied in Sentences. -- This skill involves identifying implicitly-stated ideas presented through sentences; the ideas are cause-effect relationships. In the instructional program, the skill is introduced at the preprimer level and reviewed at each subsequent reading instructional level. The subtest was 16.2, Sentence Meaning: Implied Meaning. The subtest included 12 items; two sentences from each of the six instructional levels. The total possible score was 12. The reliability coefficient for the subtest was .78.

Identifying Main Ideas Implied in Paragraphs. -- This skill involves identifying main ideas which are implicit in paragraphs. The skill's instructional span is the preprimer through 6 reading instructional levels. The subtest was 17.4, Paragraph Meaning: Implied Idea--Paragraph. There were 12 items to sample the skill: two items reflected each of the six reading instructional levels. The total possible score was 12. The reliability coefficient for the subtest was .70.

Identifying Main Ideas Implied in Stories. -- This skill is identifying main ideas which are implicitly stated in stories. The instructional span for the skill is preprimer through 6. The subtest was 17.2, Paragraph Meaning: Implied Idea--Story. The subtest contained 12 items; two stories were used for each reading instructional level from 1 through 6. The total possible score was 12. The reliability coefficient for the subtest was .68.

Identifying Details in Stories. -- This skill encompasses identifying specific, discrete, and smaller components of messages presented throughout stories. The instructional span for the skill is preprimer through 6. The subtest was 17.5, Paragraph Meaning: Details. Twenty-four items were involved. Two items were used with each story; two stories were selected to represent each reading instructional level 1 through 6. The total possible score was 24. The reliability coefficient for the subtest was .78.

Interpreting Similes. -- This skill involves interpreting similes used in the context of sentences. The skill is introduced at reading instructional level 2^1 and reviewed through 6. This skill was assessed in subtest 19.1, Figurative Language: Similes. Eight *similes* were selected for testing. The total possible score was 8. The reliability coefficient for the subtest was .44.

Interpreting Idioms. -- This skill involves interpreting idioms used in the context of sentences. The instructional span for the skill is reading instructional levels 2^1 through 6. Subtest 19.2, Figurative Language: Idioms was used to measure the skill. The subtest included eight idioms and had a total possible score of 8. The reliability coefficient for the subtest was .76.

Interpreting Hyperboles. -- This skill involves interpreting hyperboles used in the context of sentences. This skill is introduced at reading instructional level 2^1 and reviewed through 6. Facility in interpreting hyperboles was assessed in subtest 19.3, Figurative Language: Exaggeration. Eight instances of exaggeration were used in the test. The total possible score was 8. The reliability coefficient for the subtest was .71.

Interpreting Personification. -- This skill involves interpreting personification used in sentence contexts. The skill's instructional span is reading instructional levels 2^1 through 6. The skill was measured by subtest 19.4, Figurative Language: Personification. The test included eight examples of personification and the total possible score was 8. The reliability coefficient for the subtest was .80.

Interpreting Metaphors. -- This skill involves interpreting metaphors used in the context of sentences. In the reading instructional program, the skill is introduced at level 2^1 and reviewed through 6. The skill was measured in subtest 19.5, Figurative Language: Metaphors. Eight metaphors were presented in this subtest. The total possible score was 8. The reliability coefficient for the subtest was .69.

Predicting Outcomes and Actions.[1] -- This skill involves the ability to draw inferences which are based on one or more information items in a story, prerequisite knowledge of information, and certain assumptions. The answer per se is not directly stated in the story. The skill is introduced at the primer level and reviewed at each subsequent reading instructional level to 6. This skill was assessed in subtest 20.1, Drawing Conclusions: Predicting Outcomes and Actions. The subtest included 14 items: 2 at each reading instructional level from 1-7. The total possible score was 14. The reliability coefficient for the subtest was .49.

Discriminating Between Fact and Fiction.[2] -- This skill involves the ability to draw inferences based on one or more information items in a story and prerequisite knowledge in judging the reasonableness, probability, and/or feasibility of alternate answers. The answer per se is not directly stated in the story. The skill is introduced at reading instructional level 1 and reviewed at each subsequent reading instructional level to 6. This skill was assessed in subtest 20.2, Drawing Conclusions: Inferred Story Fact Versus Non-story Fact. The subtest included 14 items; two at each reading instructional level from 1-7. The total possible score was 14. The reliability coefficient for the subtest was .67.

Discriminating Between Fact and Opinion.[3] -- This skill involves the ability to designate a fact within a story setting. The answer requires an ability to draw inferences which are made on the basis of information that is given in the story, prerequisite knowledge, or a combination of both story information and prerequisite knowledge. The skill is introduced at reading instructional level 2 and reviewed at each subsequent reading instructional level to 6. The skill was assessed in subtest 20.3, Drawing Conclusions: Inferred Story Fact Versus Opinion. The subtest included 14 items; two at each reading instructional level from 1-7. The total possible score was 14. The reliability coefficient for the subtest was .54.

Description of the Intellectual Processes Tests

Four tests were used to assess the intellectual processes. These tests are described below. The descriptions include definition of the

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[1,2,3]The three critical reading skills described above were selected by Myers (1967) as part of her work for a doctoral dissertation. She used the subjects in the present project, developed similar test materials, and used similar procedures for collecting and analyzing data. Her work will be cited subsequently in the present report. Miss Myers' dissertation should be consulted for copies of the test materials and a fuller consideration of the topic, critical reading.

intellectual process, name of the test used to measure the process, the source[1] of the test, the modification of the test made for purposes of the present study, the total possible score, and the reliability coefficient for the score. Appendix N contains specimens of the tests--the directions and procedures for the teachers, the directions for the subjects, and the set of test items to which the subjects responded.

Associative Memory. -- This intellectual process involves the ability to form and remember arbitrary associations between sets of discrete stimuli and responses. The process was assessed by IP.2, Word Number. The test was an adaptation of Thurstone's (1938) Word Number Test. The following modifications were made. The number of word-number pairs was reduced from 20 to 10. All items were read to the subjects. The set of items was administered to the subjects twice. The test format and administration procedures were changed to conform with those used in the other tests. The total possible score was 20. The reliability coefficient for the test was .64.

Conceptualization. -- This intellectual process involves the ability to identify concepts, i.e., to group words on the basis of common attributes. The process was assessed by IP.1, Word Grouping. The test was a modification of the PMA Word Grouping Test (Thurstone and Thurstone, 1962). The alterations involved modifying the format and administration procedures of the PMA Word Grouping Test to be consonant with the format and procedures used with the other tests employed in the present project. The test consisted of 25 concepts. Each concept was represented by three words which were positive instances and one word which was a negative instance and which had to be designated. All test materials were read to the subjects. The total possible score was 25. The reliability coefficient for the test was .72.

Grasping Verbal Meaning. -- This intellectual process involves ability to understand ideas when they are expressed in words, that is, verbal vocabulary. The process was assessed by IP.3, Word Meaning. The test was a modification of the PMA Word Test (Thurstone and Thurstone, 1962). The modification involved altering the format and administrative procedures of the PMA Word Test to be similar to the format and procedures used with the other tests employed in the project. Essentially, the test involved identifying synonyms for 30 words. All test materials were read to the subjects. The total possible score was 30. The reliability coefficient for the test was .70.

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[1] Even though original sources are cited, the general source used was French, Ekstrom, and Price (1963), Manual for kit of reference tests for cognitive factors.

Reasoning. -- The intellectual process, reasoning, was defined herein as the associated abilities involved in using induction to find general rules which will fit sets of data, that is, the forming and trying-out of hypotheses about relationships among items in a set. The process was examined by IP.4, Number Series. The test is an adaptation from the Inductive Reasoning Test from the United States Army Alpha Test (Psychology Committee of the National Research Council, 1917). The modifications included the following. The number of items was increased from 20 to 25. The digits used in each series were changed but the principle involved remained the same in most instances. The subjects were given two exposures to the sets of items. The format and procedures for administration were changed to conform with the formats and procedures of other tests used in the present project. The total possible score was 50. The reliability coefficient for the test was .95.

Data Collection Procedures

Major steps involved in data collection included the activities listed below.

Subject Selection. -- The 44 participating classes were selected during conferences with school administrators and teachers of the respective classes. Project personnel administered the Georgia Informal Reading Inventory, Form SF, and the 1960 Revision of the Stanford-Binet Test of Intelligence, Form LM. Conferences were held with teachers about the reading instructional levels appropriate for their pupils. Subjects who did not meet the subject selection criteria were designated. Subjects eligible for the processes-sequences group and the retarded, normal, and superior groups were identified.

Test Scheduling. -- There were three testing periods during the year; each testing period consisted of more than one testing session with the pupils. The teachers administered tests #1 through #17 twice during the year, in the first week of October and again during the first week of May. These testing periods each involved five testing sessions. The teachers administered the intellectual processes tests and reading tests #19 and #20 once during the year, in late March and early April; this testing period involved three testing sessions. Generally, each testing period lasted approximately one to two weeks. Since the tests

differed in length, varying numbers of tests could be given in any one testing session. However, with one exception, the tests in any one session were arranged so that the total testing time would not exceed approximately 30 to 45 minutes. The exception was that approximately one hour was required for the session containing test #19, Figurative Language and test #20, Critical Reading.

In September and October, project personnel administered test #18, Sight Vocabulary, individually to pupils. Project personnel administered make-up tests for absentees in the retarded, normal, and superior groups as soon as practicable after the subjects returned to school. These make-up tests were the tests they missed, i.e., the tests given to the other pupils in their classes. No make-up tests were given to subjects in the processes-sequences group[1].

Test Administration and Briefing of Teachers. -- The teachers administered the tests to all pupils in their classes. Meetings for briefing teachers about test administration were held with the project teachers prior to the testing period in the fall and the two testing periods in the spring in order to provide them with materials and information regarding testing schedules and testing procedures. The materials labeled General Test Administration Procedures (Appendix O) was used in this briefing process. The General Test Administration Procedures includes general directions and schedules for each testing period. At the briefing meetings, the teachers were given a copy of the appropriate part of the General Test Administration Procedures, the

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[1]The reason for the differential procedures for make-up tests was this. In the retarded, normal, and superior groups, there were relatively few subjects in the cells formed by IQ groups intersecting with reading instructional levels. The statistical analyses used with these subjects' data involved double classification analysis of variance. These analyses required equal or proportional cell frequencies. Therefore, steps had to be taken to prevent missing data. On the other hand, with the processes-sequences sample, the analyses involved correlational procedures with data from a large number of subjects. In view of the small number of absentees on any one day and the variety of reasons for pupils' absences, the project directors considered it justifiable to eliminate a subject's scores for a variable in a set of variables being correlated if he had missing data for other variables in the set.

audio tape containing the directions for the tests to be given in the test period, and the specimen tests -- the directions and procedures for the teachers, the directions for the subjects, and the sets of test items to which the subjects responded. These items composed a teacher's set of materials for each testing period.

Materials. -- Test materials for the pupils were prepared, packaged, and delivered to the schools just prior to the testing period in the fall and the two testing periods in the spring. Also, extra tapes containing test directions (and, for several tests, test items) were deposited with the principal of the school in anticipation that some tapes might be broken. All testing materials were collected from the respective schools immediately following the testing period.

Data Processing. -- As stated previously, the teachers administered the tests to all of the pupils in their classes. After the tests were collected, tests taken by pupils identified as not having met the subject selection criteria were located and these tests were eliminated. Project personnel did the test scoring and checking, coding and checking, listing and checking, and other work required for preparing the data for the electronic computers.

Analyses

Information about the analyses is presented below. This information pertains to data, techniques for processing data relevant to the research questions, criterion for rejecting the null hypothesis, and mechanics of presentation.

Data. -- Verbal materials were used in the rational analyses employed in identifying sequences among skills. For all other analyses, data were scores on the tests. These data were considered to be interval scores. Scores for a skill were obtained from subjects at and above the reading instructional level at which a skill was introduced in the reading instructional program. The scores and the reading instructional levels involved were these. Restricted to reading instructional levels 4 and 5 were scores from test #8, Selecting

Definitions. Restricted to reading instructional levels 3, 4, and 5 were scores from these tests: test #5, Alphabetizing Words; test #6, Dictionary Guide Words; test #7, Finding Definitions; test #9, Pronunciation Symbols; test #12, Finding Syllables--Visual; test #13, Finding Syllables--Auditory. Analyses for all remaining tests included scores for reading instructional levels 2, 3, 4, and 5.

Sequences Among Basal Reading Skills. -- Subjects were the 639 subjects in the processes-sequences group. The data were the following: task analyses and content descriptions indicating the nature of the basal reading skills tested; scores on the spring administration of tests #1-#17, and scores on test #19. Rational analyses were used to establish the expected sequences; Kaiser's procedures for scaling a simplex were used to determine the goodness of fit of the simplex model to data describing the skills organized according to expected sequences. These procedures were selected after consideration of the interpretations, techniques, and problems related to scaling psychological variables. References here were Coombs (1964); Guttman (1954, 1957, 1965, 1966); Kaiser (1962); Lingoes (1965a, 1965b, 1965c, 1965d, 1966); and Torgenson (1958).

Intellectual Processes Related to Acquisition of Basal Reading Skills. -- Subjects were 639 pupils in the processes-sequences group. Data were scores on the intellectual processes tests, scores on the spring administration of reading tests #1-#17, and scores on reading tests #19 and #20.

Stepwise regression analyses were used to examine the data. The percentage contribution of each x-variable in an equation to variation in a given y-variable was determined in this way: the zero-order r for the particular y-variable and the x-variable involved was multipled by the corresponding standard partial regression coefficient (beta). The percentage contributions obtained in this way were considered to contain not only the separate coefficients of determination, but also the shared coefficients of determination. References were Dempster (1963); Efroymsen (1960); Ezekial (1953); and Steele and Torrie (1960).

The procedures were selected after considering interpretations and problems associated with multiple and partial regression and other multivariate procedures; these interpretations and problems were discussed by Cooley and Lohnes (1962); Cronbach (1960); Ghiselli (1964); Guilford (1965); McNemar (1962); Snedecor (1956); and Sparks and Mitzel (1966).

Trends Over Reading Instructional Levels. -- Subjects were 308 pupils in the retarded, normal, and superior groups. Data were the subjects' scores on the fall administration of tests #1-#17 and scores on tests #18, #19, and #20. The data were analyzed in this way: within each intelligence level, a single-factor analysis of variance and an examination for linear, quadratic, and cubic trends were performed. References were Edwards (1963); Lindquist (1953); Snedecor (1956); Steele and Torrie (1960); Williams (1959); and Winer (1962).

Level of Acquisition on the Basal Reading Skills. -- Subjects were the 308 pupils in the retarded, normal, and superior groups. Data were scores on the fall administration of tests #1-#17 and scores on tests #18, #19, and #20. Two sets of comparisons were used: one set involved the retarded and normal groups; the other set involved the normal and superior groups. The data were analyzed with t tests. The references here were Edwards (1963) and Lindquist (1953).

Rate of Acquisition on the Basal Reading Skills. -- Subjects were 308 pupils in the retarded, normal, and superior groups. Data were scores on the fall and spring administration of tests #1-#17. Data relevant to rate of acquisition were processed by a two-factor analysis of variance model: the first factor was intelligence level, the second factor was repeated measures (fall, spring) of basal reading skills. Specifically, the Lindquist (1953) Type I design was used. Two sets of comparisons were used: one set involved the retarded and normal groups; the other set involved the normal and superior groups. In any one analysis, a significant interaction was considered to indicate that the groups' rates of acquisition were different. These procedures were selected after examining the following: issues in statistical

treatment of repeated measures by analysis of variance, regression analysis, and other procedures discussed by Edwards (1963), Cooley and Lohnes (1962), Snedecor (1956), Steele and Torrie (1960), Williams (1959), and Winer (1962); issues and problems involved in measuring change discussed by Bereiter (1963), Bloom (1964), Dubois (1960), Feldt (1958), Gaito and Wiley (1963), and Lord (1963).

Criterion for Rejecting the Null Hypothesis. -- The criterion for rejecting the null hypothesis was the .05 probability level. This criterion was used for statistical tests pertinent to all research objectives. Both the .05 and the .01 probability levels are designated in the tables of statistical results. This information is presented for the reader who wishes to consider the number of significant statistics obtained in relation to the number of statistical tests performed.

Mechanics of Presentation. -- The project involved a large amount of data. Therefore, for practical reasons, three conventions were adopted for presenting the results of the statistical analyses. First, the tables in the text consist primarily of summaries of relationships; and, where necessary, descriptive statistics. Most of the descriptive statistics and all of the inferential statistics are presented in tables in the appendices. Second, only prime data are presented in the tables of statistical data in the appendices. Third, even though the statistical analyses involved unrounded numbers, numerals presented in the tables are rounded to two places in all cases except where the convention is to round decimals to three or four places.

CHAPTER 3

SEQUENCES AMONG BASAL READING SKILLS

Information in this chapter is germane to the first research objective for the present study. That objective was to identify sequences among basal reading skills within the following categories: phonetic analysis, structural analysis, dictionary, word functions, and comprehension. Specific research questions were the following.

a. Expected Sequences Among Basal Reading Skills. -- What sequence can be expected, a priori, on the basis of the criterion, level of complexity, among skills in a given category of basal reading skills?

b. Goodness of Fit of the Simplex Model. -- Does the simplex model fit sets of data describing skills in an expected sequence which were ordered, a priori, on the basis of the criterion, level of complexity?

Chapters 1 and 2 contain details about related research and procedures. Pertinent points are recapitulated briefly below.

Authors of materials for teaching reading have made suggestions about sequences among basal reading skills. Reading specialists who have also commented on sequences in other contexts include Aaron (1961, 1964), Bond and Wagner (1966), Gray (1960), McKee (1966), and Russell (1961). The present investigators located no studies devoted primarily to identifying sequences which, in Manning's (1960, p. 116) terms, were based on "the behavior of the learners themselves." Therefore, this phase of the present study was designed to supplement the work of reading specialists who proposed sequences on the basis of competent professional judgment and extensive experience in reading instruction.

Subjects were the 639 pupils in the processes-sequences group; this total group consisted of four subgroups who were taught at reading instructional levels 2, 3, 4, and 5, respectively. These subjects were taught in the Scott, Foresman New Basic Readers program during

the school year. The subjects were administered 20 tests designed to assess 50 basal reading skills taught in the instructional program. Tests #1 through #17 encompassed forty-one basal reading skills; these tests were administered in the fall and again in the spring. Tests #19 and #20 covered eight skills; these tests were given only in the spring. Test #18, which sampled one skill, was administered only in the fall.

Evidence for the first research question, the expected sequences, was obtained from task analyses of the skills in the Scott, Foresman New Basic Readers program and content descriptions of tests used to assess these skills. That is, for each skill, an examination was made of the definition of the skill and the description of activities involved in successfully performing the skill as it was tested. This evidence was used in making a judgment about relative complexity, or inclusiveness[1], of skills in a set. In this way, expectations were posed about hierarchical sequences among skills, with the hierarchy being defined in terms of the criterion, level of complexity.

Data pertinent to the second research objective, goodness of fit of the simplex model, were scores on the spring administration of tests #1 through #17 and scores on test #19 which was administered only in the spring. These data were analyzed in this way. For each category of skills, a correlation matrix was formed. The variables in this

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[1] Level of complexity was defined as degree of inclusiveness. In the context of the present study, degree of inclusiveness refers to the extent to which any one skill within a category of skills involves activities characteristic of other skills in that category plus additional activities. For example, a set of activities which varies in inclusiveness in terms of this type of accretion can be described in this way: skill #1 consists of activity a; skill #2 consists of activity a and, in addition, activity b; skill #3 consists of activity a, activity b, and, in addition, activity c; and so on.

matrix were ordered according to the sequence posed on an a priori basis in terms of the complexity criterion. Then, appropriate aspects of Kaiser's (1962) procedures for scaling a simplex were used. The relative complexity of the basal reading skills in a category was determined by calculating the simplex loadings (A_j and a_j) for the skill. Goodness of fit was examined in two ways: comparing the observed and reproduced r_{jk} and R_{jk} matrices, and calculating the q^2 index (the ratio of the sum of squares accounted for by the model to the total sum of squares).

The results of the rational analyses and the psychometric analyses are presented below. The organization of this presentation is the following. Each category of basal reading skills is considered in a separate section, and each section consists of these parts: summary statement relevant to the two research objectives, the expected sequences and goodness of fit; description of each skill including the definition and the activities involved in performing the skill as it was tested; considerations involved in posing the expected sequences; and data yielded by the simplex analysis. After each category of basal reading skills is considered separately, results are summarized for the several categories.

The psychometric information presented in the text is restricted to the a_j loadings and the q^2 index for each category of skills. The observed and reproduced r_{jk} and R_{jk} matrices are in Appendix P.

Phonetic Analysis Skills

The phonetic analysis category included nine skills. Among these nine skills, the expected hierarchical sequence from least to most complex was associating vowel letters and sounds, associating consonant letters and sounds, associating consonant digraphs and sounds, associating consonant blends and sounds, identifying syllables in orally and visually presented short words, identifying syllables in visually presented short words, identifying syllables in orally and visually presented long words, identifying syllables in visually

presented long words, and using spelling patterns. There was a fairly good fit between the simplex model and data describing the phonetic analysis skills organized in this expected sequence. These statements are based on the considerations presented below.

Definition and Description of Skills

Associating Vowel Letters and Sounds. -- This skill involves associating vowel letters and sounds when sounds are presented in isolation. For each item, the subject was given a set of four vowel letters. A voice on tape pronounced the long or short sound for one of these letters and the subjects had to designate the letter corresponding to the vowel sound that had been pronounced. Activities required for successful performance of the skill as it was tested included understanding what a vowel is, understanding that vowel letters represent vowel sounds, discriminating between different vowel sounds, recognizing specific vowel letters, recognizing specific vowel sounds, recognizing specific sound-letter correspondences, and knowing that multiple sounds are represented by each letter.

Associating Consonant Letters and Sounds. -- This skill involves associating consonant letters and sounds when sounds are presented in isolation. The phrase, in isolation, means that the sound was not presented in a word. A consonant must be blended with a vowel for pronunciation; therefore, in the test, the practice of blending the specified consonant sound with -uh, as buh and cuh, was followed. For each test item, the subject was given a set of four consonant letters from which to choose. A voice on tape pronounced the sound for one of these letters. The subject's task was to designate the consonant letter corresponding to the sound that had been presented. Activities involved in successful performance of the skill as it was tested included understanding what a consonant is, understanding that consonant letters represent consonant sounds, discriminating between different consonant sounds, recognizing specific consonant sounds, recognizing specific consonant letters, recognizing specific sound-letter correspondences, and understanding that some consonant letters may represent more than one sound.

Associating Consonant Digraphs and Sounds. -- Associating consonant digraphs and sounds when sounds are presented in isolation was another phonetic analysis skill assessed in the study. The subject was given a set of four consonant digraphs on each item. As a voice on tape presented the sound for one of these digraphs, the subject had to designate the digraph corresponding to the sound. The

following activities were involved: understanding the concept of consonant digraphs (two consonant letters representing one sound); discriminating between different consonant digraphs; understanding that the letter form of the digraph represents the sound of the digraph; recognizing specific consonant digraphs in letter form; recognizing sounds of specific digraphs; recognizing specific sound-letter correspondences for digraphs; and, understanding that some consonant digraphs may represent more than one sound (e.g., voiced/voiceless th).

Associating Consonant Blends and Sounds. -- Another skill assessed was associating consonant blends and sounds when sounds are presented in isolation. For each item, the subject was given a set of four consonant blends from which to choose. A voice on tape pronounced one of these blends. The sounds were pronounced in isolation. The subject had to designate the letters for the blend corresponding to the sounds. Successful achievement here encompassed these activities: understanding the concept of consonant blends (two or three consonant letters with combined, yet distinct sounds); discriminating between different consonant blends; understanding that the letter form of the blend represents the sound of the blend; recognizing specific consonant letters; recognizing specific consonant sounds; recognizing specific consonant blends in letter form; recognizing sounds of specific blends; and recognizing specific sound-letter correspondences for blends.

Identifying Syllables in Orally and Visually Presented Short Words. -- Identifying syllables in words consisting of three syllables or less presented both visually and orally was the skill studied here. The materials were English words of such difficulty that subjects probably would not know their meanings or pronunciations. Words consisting of one, two, or three syllables were presented in visual and auditory form. The subject's task was to look at the word, listen to the pronunciation, decide how many syllables the word contained, and then write the number of syllables. Performance of the skill as it was tested included these aspects of behavior: understanding what a syllable is; understanding relationships between vowel sounds and syllables (e.g., one vowel sound in a word means one syllable); understanding that a word may have one or more syllables; activities involved in associating vowel letters and sounds extended to include other vowel sounds such as the r-controlled vowel sound and schwa sound; activities involved in associating sounds with single consonant letters, digraphs, and blends extended to include elements in initial, medial, and final positions in words, concepts of consonant syllables and silent consonant letters, and similar activities involved in using structural analysis skills pertaining to prefixes, endings, suffixes, and root-change rules; knowing syllabication principles needed for spelling patterns; and hearing parts in words.

Identifying Syllables in Orally and Visually Presented Long Words. -- This skill involves identifying syllables in words consisting of four or more syllables presented both orally and visually. With one exception, the materials and requirements here were the same as those used for identifying syllables in orally and visually presented short words. The exception was that the materials were words consisting of four, five, or six syllables instead of words consisting of one, two, or three syllables. The activities here were the same as those in identifying syllables in orally and visually presented short words, but they were extended to words containing four, five, or six syllables.

Identifying Syllables in Visually Presented Short Words. -- Identifying syllables in visually presented words consisting of three syllables or less was another phonetic analysis skill assessed in the investigation. With one exception, the test materials and requirements here were the same as those used for identifying syllables in orally and visually presented short words. In the present test, the words were not pronounced for the subject; he had only the visual stimulus. Identifying syllables in visually presented short words was presented before identifying syllables in orally and visually presented short words. All activities included in identifying syllables in orally and visually presented short words were also included here with one exception: hearing parts of words was not involved.

Identifying Syllables in Visually Presented Long Words. -- This skill involves identifying syllables in words consisting of four or more syllables presented visually. With one exception, the test materials and requirements were the same as those for identifying syllables in orally and visually presented long words. The materials were presented only in visual form in this test. They were not pronounced. Identifying syllables in visually presented long words was presented before identifying syllables in orally and visually presented long words. Activities encompassed by identifying syllables in visually presented short words were included here and were extended to words containing four, five, or six syllables.

Using Spelling Patterns. -- Using spelling patterns as clues to pronouncing vowel sounds in one-syllable words, polysyllabic words with accented first syllables, and polysyllabic words with accented final syllables was also tested as a part of the study. Visual material given the subject consisted of a list of nonsense words with a vowel letter or letters underlined, each of which had beside it four English words in which one or more vowel letters had been underlined. In each item, the auditory part consisted of the nonsense word being spelled and the four English words being pronounced for the subject. The subject had to decide which of the four vowel sounds in the English words corresponded to the vowel sound in the nonsense word. In the test, 11 spelling patterns were used as clues to pronouncing vowel sounds in one-syllable words, polysyllabic words with accented first syllables, and polysyllabic words with accented final syllables. Activities

included were these: activities involved in associating vowel letters and sounds extended to include additional vowel sounds (e.g., r-controlled vowel sound, schwa sound, and so on); activities involved in associating consonant letters and sounds extended to include consonants in initial, medial, and final positions in words, concepts of consonant syllables and silent consonant letters, and so on; activities involved in syllabication extended to include such activities as recognizing consonant syllables, and so on; understanding that visual clues to vowel sounds may be used; and knowing and using 11 specific spelling patterns which function as vowel pronunciation rules.

Expected Sequence

As stated previously, the expected hierarchical sequence among the phonetic analysis skills was associating vowel letters and sounds, associating consonant letters and sounds, associating consonant digraphs and sounds, associating consonant blends and sounds, identifying syllables in orally and visually presented short words, identifying syllables in visually presented short words, identifying syllables in orally and visually presented long words, identifying syllables in visually presented long words, and using spelling patterns. The rationale for this expectation is presented below.

Associating vowel letters and sounds and associating consonant letters and sounds were considered to be similar in complexity. The two skills were considered to be the least complex in the category.

Associating consonant digraphs and sounds was more inclusive. It encompassed all the skills which associating vowel letters and sounds and associating consonant letters and sounds did. In addition, it involved skill in dealing with two letters instead of one.

Associating consonant blends and sounds might be slightly more inclusive than associating consonant digraphs and sounds. It required not only ability to deal with two consonant letters, but also the combined, yet distinct, sounds corresponding to these letters.

Identifying syllables in orally and visually presented short words and identifying syllables in visually presented short words were similar in inclusiveness. Both were more inclusive than the preceding

three skills. The syllabication skills required activities involved in dealing with a greater variety of phoneme-grapheme correspondences and with phoneme-grapheme correspondences presented in words, not just in isolation; they also required activities involved in dealing with consonant letters, digraphs, and blends in the initial, medial, and final positions. In addition, they required knowledge of concepts related to syllables. They also involved knowledge of structural analysis skills and how affixes are related to syllabication.

Identifying syllables in orally and visually presented long words and identifying syllables in visually presented long words were similar in complexity. Both were slightly more inclusive than identifying syllables in orally and visually presented short words and identifying syllables in visually presented short words. That is, they required using the skills involved in syllabication with words which involved a greater number of syllables.

Using spelling patterns was the most inclusive of the phonetic analysis skills. It required all of the skills involved in dealing with sound-symbol correspondences and with syllabication. In addition, it required skills and concepts included in using primary and secondary accents and awareness that visual clues may be helpful in pronouncing vowel sounds in words. It also required knowledge of,and ability to apply,spelling patterns as clues to pronouncing single syllable words and polysyllabic words with accented first syllables and with accented final syllables.

Goodness of Fit of the Simplex Model

Table 3 and Appendix P contain results of the simplex analyses of data describing the phonetic analysis skills organized in the expected sequence. The a_j loadings increased in size as the skills increased in inclusiveness. The q^2 value was .8653. The observed and reproduced matrices were similar. These indices suggested that the simplex model fit data describing the phonetic analysis skills arranged in a hierarchical order in terms of the complexity dimension.

Table 3

Phonetic Analysis Skills: Summary of the a_j and q^2 Values

Basal reading skill	a_j
10.1 Associating vowel letters and sounds	0.262
10.2 Associating consonant letters and sounds	0.348
10.3 Associating consonant digraphs and sounds	0.603
10.8 Associating consonant blends and sounds	0.624
13.1 Identifying syllables in orally and visually presented short words	1.506
12.1 Identifying syllables in visually presented short words	1.752
13.2 Identifying syllables in orally and visually presented long words	2.079
12.2 Identifying syllables in visually presented long words	2.280
11.3 Using spelling patterns	2.328
$q^2 = .8653$	

Structural Analysis Skills

The structural analysis category encompassed seven skills. However, only six skills were considered in organizing the set according to the criterion, level of complexity. Translating contractions was excluded from the set. Translating contractions was judged to be a variant of identifying components of compounds. That is, a contraction is a compound form consisting of two root words; through usage, this compound form has been altered into a form with letters omitted. Therefore, the six remaining skills in the structural analysis category and translating contractions differ on a dimension other than complexity. The expected hierarchical sequence among the remaining

six skills from least to most complex was the following: identifying components of compounds, identifying roots, endings, and suffixes, identifying roots and prefixes, identifying roots and multiple affixes, locating roots by using root-change rules, and changing roots by using root-change rules. The simplex model fit fairly well the data describing the structural analysis skills ordered in this expected sequence. These statements are based on the considerations presented below.

Definition and Description of Skills

Identifying Components of Compounds. -- This skill involves identifying component parts of compound words. The subject was given compound words; he had the task of identifying the two root words making up each compound. He indicated his responses by drawing a vertical line to separate the root words. Activities encompassed by the skill as it was measured were understanding that a compound is a complex form composed of two or more root words which are written and spoken together and usually combine their meaning to make one word; understanding what a root word is, and recognizing specific root words.

Identifying Roots, Endings, and Suffixes. -- Identifying roots, endings, and suffixes in words in which spelling changes do not occur was another of the basal reading skills studied. The subject was given inflected and derived forms of words, and his task was to distinguish between the root words and the endings or suffixes. He then had to write the root words. Test activities included understanding what a root word is, understanding what an ending and a suffix are, recognizing specific endings and suffixes, recognizing specific root words, and understanding that complex forms are made by using root words and affixes.

Identifying Roots and Prefixes. -- This skill involves identifying roots and prefixes in words in which spelling changes do not occur. The subject, given derived forms composed of prefixes and roots, had to distinguish between the root words and prefixes and then write the root words. Activities involved in this undertaking were: understanding what a root word is, understanding what a prefix is, understanding that complex forms are made by using root words and prefixes, recognizing specific prefixes, and recognizing specific root words.

Identifying Roots and Multiple Affixes. -- Identifying roots and affixes in words with more than one affix, with some words involving spelling changes, was another skill investigated in the study. The

subject was given complex words composed of root words and prefixes, suffixes, and endings in various combinations, and his task was to distinguish between the root words and the affixes. By writing the root word, he indicated his response to each item. This task involved understanding what a root word is, understanding what affixes are, recognizing specific affixes, recognizing specific root words, knowing and using specific root-change rules, and understanding that complex forms sometimes include more than one affix.

Locating Roots by Using Root-change Rules. -- Another skill studied was using rules for root-changes to locate root words in inflected and derived forms in which spelling changes occur. Given inflected and derived forms which had spelling changes in the roots the subject had to distinguish between the root word and the ending or suffix. Then, using his knowledge of the rule, he had to write the root as it was before the spelling change was made in combining it with an affix to make the complex word form. Task activities included understanding what endings and suffixes are; understanding what a root word is; recognizing specific root words; recognizing specific endings and suffixes; understanding that complex forms are made by using root words and affixes; understanding that some root words require spelling changes when they are combined with certain endings and suffixes; and knowing and using seven specific root-change rules.

Changing Roots by Using Root-change Rules. -- This skill involves applying rules for root changes to produce inflected and derived forms. In the assessment of this skill, the subject was given root words and endings and suffixes. His task was to use these components in making new word forms, which he had to write. Some of the new word forms did and some did not require spelling changes in the roots. This task encompassed these activities: understanding what endings and suffixes are, understanding what a root word is, understanding that complex forms are made by using root words and affixes, understanding that some root words require spelling changes when they are combined with certain endings or suffixes, knowing seven specific root-change rules, and being able to distinguish when to apply root-change rules and when not to apply these rules.

Expected Sequence

To reiterate, the expected hierarchical sequence was identifying components of compounds, identifying roots, endings, and suffixes, identifying roots and prefixes, identifying roots and multiple affixes, locating roots by using root-change rules, and changing

roots by using root-change rules[1]. The rationale for this expectation is presented below.

Consideration of activities involved in the structural analysis skills measured revealed two overlapping subsets of activities. The first subset included identifying components of compounds, identifying roots, endings, and suffixes, identifying roots and prefixes, and identifying roots and multiple affixes. These skills encompassed activities involved in combining specific morphemes. The skills in the second subset were more inclusive. The skills here were locating roots by using root-change rules and changing roots by using root-change rules. In addition to activities involved in combining specific meaning elements, these skills also encompassed activities involved in applying rules and conventions for changing root words.

Within the two subsets, there were only slight variations in complexity. Consider the first subset. Identifying components of compounds, identifying roots and prefixes, and identifying roots, endings, and suffixes were similar in that they involved combinations of two meaning elements. They differ in this respect: identifying components of compounds included two root words while identifying roots and prefixes and identifying roots, endings, and suffixes involved combinations of root words and affixes. Identifying roots and multiple affixes was slightly more complex; it involved combinations of more than two meaning elements: a root word and, in the cases measured, two affixes.

In the second subset, locating roots by using root-change rules and changing roots by using root-change rules were similar in complexity. Both were more complex than skills in the first subset. In addition to understanding the production of complex words and knowledge of specific meaning units, they required knowledge of seven

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[1]Translating contractions was categorized as a structural analysis skill. However, it was judged to be a member of a different set of skills from the set considered here. Consequently, translating contractions was not considered in the sequence of structural analysis skills ordered on the complexity dimension.

specific root-change rules and the kinds of spelling changes required in various situations.

Goodness of Fit of the Simplex Model

Table 4 and Appendix P include results of the simplex analysis of the structural analysis skills organized in the expected sequence.

Table 4

Structural Analysis Skills: Summary of the a_j and q^2 Values

Basal reading skill	a_j
3.1 Identifying components of compounds	.557
4.1 Identifying roots, endings, and suffixes	.855
4.2 Identifying roots and prefixes	.986
4.4 Identifying roots and multiple affixes	1.077
4.3 Locating roots by using root-change rules	1.280
1.1 Changing roots by using root-change rules	1.548
$q^2 = .8943$	

The simplex loadings became progressively larger as the skills increased in complexity. The q^2 index was .8943. The observed and reproduced matrices were similar. Therefore, the simplex model fit the data describing the structural analysis skills arranged in a hierarchical order on an a priori basis in terms of the complexity criterion.

Dictionary Skills

Eight of the ten dictionary skills were considered in the identification of a sequence. Interpreting single pronunciation symbols and interpreting multiple pronunciation symbols were excluded from consideration in organizing the remaining dictionary skills according to complexity. Although the skills involving pronunciation symbols were correctly categorized as dictionary skills, they were judged to belong to a different set of dictionary skills. That is, interpreting single pronunciation symbols and interpreting multiple pronunciation symbols pertained to the sounds of words while the remaining skills pertained to locating lexical meanings. Among the remaining skills, the expected hierarchical order from least to most complex was identifying alphabetical sequences based on first letter, identifying alphabetical sequences based on third letter, identifying alphabetical sequences based on first, second, or third letter, using dictionary guide words, finding definitions of single entry words, finding definitions of multiple entry words, selecting definitions of single entry words, and selecting definitions of multiple entry words. Generally, the simplex model fit fairly well the data describing the eight dictionary skills organized in this expected sequence. Described below are the bases for these statements.

Definition and Description of Skills

Identifying Alphabetical Sequences Based on First Letter. -- This skill involves identifying alphabetical sequences among words in which the ordering principle was based on the first letter of the words. The subject was given two groups of six words each, and he had to decide how the words in each group should be placed in alphabetical order. To accomplish this, he had to recognize that the words could be ordered on the basis of the first letter. He then had to specify this sequence by assigning each word a numeral from the range one through six according to the order in which the words should be alphabetized. Test activities included naming letters of the alphabet, knowing order of letters in the alphabet, recognizing general alphabetical position and sequence of words based on first letter, and arranging words in alphabetical sequences on the basis of first letter.

Identifying Alphabetical Sequences Based on Third Letter. -- This skill involves identifying alphabetical sequences among words in which the ordering principle was based on the third letter of the words. The subject was given two groups of words, six words in each group. To decide how words in each group should be put in alphabetical order, he had to recognize that the words could be ordered on the basis of third letter. He then had to specify the order by numbering the words from one to six, according to the order in which they should be alphabetized. Activities included in this skill were knowing names of letters in the alphabet, knowing order of letters in the alphabet, recognizing general alphabetical position and sequence of words based on first letter, arranging words in alphabetical sequences on the basis of first letter, recognizing that words beginning with the same letter are ordered by the first letter which are not common to the words, and recognizing general alphabetical position and sequence of words based on third letter.

Identifying Alphabetical Sequences Based on First, Second, or Third Letter. -- This skill consists of identifying alphabetical sequences among words in which the ordering principle was based on the first, second, or third letter of the words. Two groups of six words each were presented to the subject, and his task was to decide how the words in each group should be alphabetized. To accomplish this, he had to recognize that words in a given list could be ordered on the basis of first, second, or third letters. He also had to specify this order by numbering the words from one to six, according to the sequence in which the words should be alphabetized. Successful accomplishment of test items involved the following: knowing the names of letters in the alphabet, knowing alphabetical order of letters, recognizing general alphabetical position and sequence of words based on first letter, arranging words in alphabetical sequences on the basis of the first letter, recognizing that words beginning with the same letters are ordered by the first letters which are not common to the words, recognizing general alphabetical position and sequence of words based on first, second, or third letters, knowing how to order words by first, second, or third letter, and recognizing need to shift among several bases within a list of words for ordering words and knowing how to make that shift.

Using Dictionary Guide Words. -- This skill involves knowing the function of and using dictionary guide words. Given a list of 30 words and a set of dictionary guide words, the subject had to specify the page on which each word on the list could be found. In half the guide words, use was based on the third letter, in the other half, use was based on the fourth letter. Successful achievement on the task depended upon ability to recognize and use alphabetical sequences based on first letter and on subsequent letters, understanding the function and meaning of guide words, familiarity with the way guide words and entry words are arranged in a dictionary, and ability to use guide words to locate entry words.

Finding Definitions of Single Entry Words. -- Another basal reading skill assessed was using a glossary for locating definitions of single entry words with multiple meanings. The subject was presented with single entry words and their definitions, as given in the dictionary. His task was to locate the entry word and then decide on the entry number and meaning number of each of the words listed. Activities encompassed in successful completion of this task were these: recognizing and using general alphabetical position and sequence of words; recognizing meaning and function of guide words; knowing how words are arranged in the glossary; using guide words to locate entry words; understanding that a word may have more than one meaning, knowing the import of the terms entry words, entry numbers, and meaning numbers; knowing how multiple meanings are designated; and knowing how to use a glossary to locate appropriate meanings of words.

Finding Definitions of Multiple Entry Words. -- This skill involves using a glossary for locating definitions of multiple entry words with multiple meanings. The test was like finding definitions of single entry words with one exception. The subject was given words which had multiple entries as well as multiple meanings. For the definition given, he had to select the correct entry number from among several and the correct meaning number from among several. Activities necessary for accomplishing this skill were utilizing skills in finding definitions of single entry words, understanding that some meanings of multiple meaning words are designated by separate entries and separate meanings within each entry, and knowing how multiple entries as well as multiple meanings are designated.

Selecting Definitions of Single Entry Words. -- Another dictionary skill studied was selecting glossary definitions appropriate for substituting for words in the context of sentences, each word being a single entry with multiple meanings. The subject, given sixteen sentences with a word underlined in each, was asked to find each underlined word in a glossary and specify its entry and meaning numbers. Successful accomplishment of this task included the following activities: utilizing skills used in finding definitions of single entry words; noting functions of words in a sentence; using italicized sentences in glossaries to clarify meaning, e.g., comparing sentences in glossary with sentences under consideration; and selecting meanings to fit contexts.

Selecting Definitions of Multiple Entry Words. -- This skill involves selecting glossary definitions appropriate for substituting for words in the contexts of sentences, each word being a multiple entry with multiple meanings. With one exception, the test was identical to selecting definitions of single entry words; the difference was that the words had multiple entries as well as multiple meanings. For the word he was given, the subject had to write the number of the correct meaning from among several possibilities and the number of the correct entry from among several possibilities. Selecting definitions of multiple entry words involved using, in combination, activities

included in finding definitions of multiple entry words and selecting definitions of single entry words.

Expected Sequence

As stated previously, the expected hierarchical sequence was identifying alphabetical sequences based on first letter, identifying alphabetical sequences based on third letter, identifying alphabetical sequences based on first, second, or third letter, using dictionary guide words, finding definitions of single entry words, finding definitions of multiple entry words, selecting definitions of single entry words, and, selecting definitions of multiple entry words[1]. The rationale for this expected sequence is presented below.

Identifying alphabetical sequences based on first letter was considered to be the least complex. Identifying alphabetical sequences based on third letter was more complex. In addition to skills involved in identifying alphabetical sequences based on first letter, identifying alphabetical sequences based on third letter required recognition that words beginning with the same initial letters are ordered by the first letters which are not common to the words. Specifically, the subjects had to recognize that the first two letters of the words were common while the third differed, and then he had to order the word on the basis of the third letter.

Identifying alphabetical sequences based on first, second, or third letter was a little more complex than identifying alphabetical sequences based on third letter. In involved the same activities as the two preceding skills; in addition, the subject had to recognize, in a set of words, the need to shift among several bases for ordering words, and he had to make that shift.

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[1]Interpreting single pronunciation symbols and interpreting multiple pronunciation symbols were categorized as dictionary skills. However, they were judged to belong to a different set from the set considered here; therefore, they were not included in the sequence of dictionary skills ordered on the complexity dimension.

Specifically, he had to recognize the need for, and then order, words in a set on three bases: first letter, second letter, and then third letter.

Using dictionary guide words was more complex. It included skills required for identifying alphabetical sequences based on first, second, or third letter. In addition, it involved understanding the functions and meanings of guide words, familiarity with word arrangements in dictionaries, and ability to use guide words to locate entry words with that use encompassing the third and fourth letters of the words.

Finding definitions of single entry words required the use of a glossary, and thus involved all of the activities included in using dictionary guide words. In addition, it involved recognition that words have multiple meanings and knowledge about how multiple meanings are designated in dictionaries. The subject then had to deal with words for which there were multiple meanings but only single entries.

Finding definitions of multiple entry words included all of the skills that finding definitions of single entry words did. In addition, it required the ability to deal with multiple entries as well as multiple meanings.

Selecting definitions of single entry words included the skills involved in finding definitions of single entry words. It also included ability to note functions of words in a sentence, ability to use italicized sentences in glossaries to clarify meanings, and to select meanings to fit context.

Selecting definitions of multiple entry words was more complex. It consisted of ability to use the skills involved in selecting definitions of single entry words in dealing with words having multiple meanings and multiple entries.

Goodness of Fit of the Simplex Model

The results of the simplex analysis are in Table 5 and Appendix P. These results pertain to the fit of the simplex model to data describing the dictionary skills organized in the expected sequence. The size of the a_j loadings increased in conjunction with the complexity of the skills. The q^2 index was .8722 and the observed and reproduced matrices were similar. Therefore, there was a reasonably good fit between the simplex model and data describing dictionary skills arranged in a hierarchical order on the basis of complexity level.

Table 5

Dictionary Skills: Summary of the a_j and q^2 Values

Basal reading skill	a_j
5.1 Identifying alphabetical sequences based on first letter	0.432
5.2 Identifying alphabetical sequences based on third letter	0.589
5.3 Identifying alphabetical sequences based on first, second, or third letter	0.714
6.3 Using dictionary guide words	0.855
7.1 Finding definitions of single entry words	1.366
7.2 Finding definitions of multiple entry words	1.282
8.1 Selecting definitions of single entry words	1.972
8.2 Selecting definitions of multiple entry words	1.865
$q^2 = .8722$	

Word Functions Skills

The category, word functions skills, encompassed two subsets of skills: recognizing the functions of words and phrases in sentences and specifying the form classes needed to function in given sentence contexts. Each subset included nouns, verbs, adjectives, and adverbs. There was no reason for expecting the four elements within each subset to differ in level of complexity as defined by inclusiveness. Therefore, the a priori ordering of variables was restricted to the subsets as a whole. The expected sequence from less to more complex was recognizing the functions of words and phrases in sentences and then specifying the form classes needed to function in given sentence contexts. The psychometric analysis could not be applied to data describing two variables; and so, the goodness of fit of the simplex model could not be tested. The basis for the expectation about order is presented below.

Definition and Description of Skills

Recognizing Functions. -- This subset encompassed four skills: recognizing functions of nouns, recognizing functions of verbs, recognizing functions of adjectives, and recognizing functions of adverbs. For these four skills, the test requirements and the activities involved in the skills were essentially the same. Therefore, recognizing functions of nouns may be described here as an illustration for all four skills.

Recognizing functions of nouns involves recognizing functions of words and phrases which serve as nouns in sentences. The subject was given a set of sentences. In each sentence, a word or phrase which functioned as a noun was underlined. Included with this material were sentences used to test recognition of functions of verbs, adjectives, and adverbs. Sentences testing all four form classes were used together so that the different form classes could serve as mutual foils. The subject also was given a reference sheet which was designated List of Word Groups. On this reference sheet, the four form classes were defined in terms which had been used in the reading instructional program. The subject's task was to read the sentence and decide how the underlined word was used. Then, consulting the reference sheet, as necessary, he had to designate the word group (form class)

to which the underlined word belonged in terms of its function in the sentence. With one exception, the subtests for recognizing functions of verbs, recognizing functions of adjectives, and recognizing functions of adverbs were the same as the subtest for recognizing functions of nouns. The one exception was that the underlined words or phrases were verbs, adjectives, and adverbs, respectively. The activities encompassed by the skills were comprehending the meanings of sentences, understanding that words have syntactic functions as well as semantic meanings, grouping words by syntactic functions, and determining word functions from context.

Specifying Functions. -- This subset included four skills: specifying functions of nouns, specifying functions of verbs, specifying functions of adjectives, and specifying functions of adverbs. Again, the test activities and the activities involved in the skills were essentially the same. Consequently, specifying functions of nouns can be used for illustration.

Specifying functions of nouns involves specifying that nouns are the form class which will function in given sentence contexts. In testing, the subject was given a set of sentences. Words omitted from each sentence were designated by blank lines. Included also were sentences in which there were omissions for words which served as verbs, adjectives, and adverbs. The four form classes served as foils for each other. The subject also was given the reference sheet designated List of Word Groups. The subject's task was to read the sentence and decide what kind of word (form class) had been omitted. Then, consulting the reference sheet as necessary, he had to designate the word group (form class) to which the omitted word belonged in terms of its function in the sentence. With one exception, the subtests for specifying functions of verbs, specifying functions of adjectives, and specifying functions of adverbs were the same as the subtest for specifying functions of nouns. The one exception was that the omitted words functioned as verbs, adjectives, and adverbs, respectively. The activities included in the skills were comprehending the meanings of sentences, understanding that words have syntactic functions as well as semantic meanings, grouping words by syntactic functions, determining word functions from context, going beyond the data to infer possible words which would fit given sentence contexts, and specifying the syntactic functions of the inferred words.

Expected Sequence

The expected order from less to more complex was recognizing functions of words and phrases in sentences and then specifying the form classes needed to function in given sentence contexts. Specifying functions was considered more complex for this reason. It involved the

activities which recognizing functions did. In addition, it required ability to project beyond the given information to decide the possible words which could be used to complete sentences and the ability to specify or identify the syntactic functions of the inferred words.

Goodness of Fit of the Simplex Model

As stated previously, the hierarchical ranking of word functions skills was limited to the subsets as a whole. There was no basis for expecting the skills within the subsets to vary in complexity as defined by inclusiveness. The psychometric analysis could not be applied to data describing two variables, and thus the goodness of fit of the simplex model was not tested.

Comprehension Skills

The set of comprehension skills contained three subsets: identifying directly stated ideas and details, identifying implicitly stated ideas, and interpreting figurative language. There was no reason for expecting the skills within the figurative language subset to differ in complexity; consequently, sequences were identified for only the first two subsets, directly stated elements and implied ideas.

In the first subset, identifying directly stated ideas and details, the expected hierarchical order among skills was identifying cause-effect relationships directly stated in sentences, identifying details in stories, identifying main ideas directly stated in paragraphs, and identifying main ideas directly stated in stories. In the second subset, identifying implicitly stated ideas, the expected hierarchical sequence was identifying cause-effect relationships implied in sentences, identifying main ideas implied in paragraphs, and identifying main ideas implied in stories. The simplex model fit fairly well the data describing the skills organized in these expected sequences. The background for these expectations is presented below.

Definition and Description of Skills

Identifying Directly Stated Ideas and Details

Identifying Cause-effect Relationships Directly Stated in Sentences. -- This skill involves identifying directly stated cause-effect relationships presented through sentences. The subject was given a set of sentences and, for each sentence, a question pertaining to a directly stated cause-effect relationship. His task was to read the sentence and answer the question. Activities encompassed by this skill were understanding that a sentence is a unit of meaning, grasping cause-effect relationships, and identifying directly stated relationships.

Identifying Details in Stories. -- Identifying specific and smaller components of messages presented throughout stories was another skill investigated. The subject was given a set of stories, each consisting of several paragraphs. For each story, he was given two questions about specific details. His task, then, was to locate in the story information pertaining to the questions. This skill involved selecting information pertaining to a particular detail from a larger amount of information pertaining to a number of details.

Identifying Main Ideas Directly Stated in Paragraphs. -- This skill consists of identifying main ideas which are directly stated in paragraphs. The test material was a set of stories, each several paragraphs long. For each story, the subject was given a question about a directly stated idea in one of the paragraphs; he had to find the paragraph which contained pertinent information and then use the information to answer the question. Successful completion of this task included selecting, from several paragraphs, the paragraph containing an idea in question and integrating the information in the paragraph to use in identifying the main idea in the paragraph.

Identifying Main Ideas Directly Stated in Stories. -- This skill involves identifying main ideas which are directly stated in stories. The subject was given a set of stories, each consisting of several paragraphs. For each story, he was given a question pertaining to a main idea directly stated in the story. The subject's task was to locate the information necessary to answer the question, to integrate this information, and to use it in deciding about the main idea of the story. Activities included in the skill were integrating the information given in an entire story and using this information in specifying a main idea in the story.

Identifying Implicitly Stated Ideas

Identifying Cause-effect Relationships Implied in Sentences. -- This skill involves identifying implicitly stated cause-effect relationships presented through sentences. The subject was given a set of sentences and, for each sentence, a question pertaining to a cause-effect relationship implied in the sentence. His task was to read the sentences and answer the questions. Test activities were these: understanding that a sentence is a unit of meaning; grasping cause-effect relationships; and identifying implicitly stated relationships presented through sentences, that is, going beyond the given information and making an inference pertinent to a specific question.

Identifying Main Ideas Implied in Paragraphs. -- This skill encompasses identifying main ideas which are implied in paragraphs. The test material consisted of a set of stories, each consisting of several paragraphs. For each story, the subject was given a question pertaining to an idea implied in one of the paragraphs, and his task was to find the paragraph which contained relevant information, to use the information in making an inference, and then to answer the question. Test activities included these: selecting, from several paragraphs, the paragraph containing the idea in question; integrating information in the paragraph and using this information to infer a main idea pertaining to a given question.

Identifying Main Ideas Implied in Stories. -- This skill is identifying main ideas which are implied in stories. The subject was given a set of stories, each consisting of several paragraphs. He was given a question about a main idea implied in each story. The subject's task was to locate information pertinent to the question, to integrate this information, to use it in making an inference, and then to answer the question. Activities encompassed by this skill were integrating the information given in an entire story and using the given information in making an inference appropriate to a specific question pertaining to main idea in the story.

Expected Sequence

For the skills in the subset, identifying directly stated ideas and details, the expected sequence was identifying cause-effect relationships directly stated in sentences, identifying details in stories, identifying main ideas directly stated in paragraphs, and identifying main ideas directly stated in stories. This expectation was based on several considerations. Identifying cause-effect

relationships directly stated in sentences was considered to be the least complex. It required that the subject discern a specific element which was explicitly stated in a short unitary bit of material. Identifying details in stories was more complex. The subject still had to identify specific elements to use in answering questions; however, he had to note a number of details in an entire story and select the specific information appropriate for answering a specific question. Identifying main ideas directly stated in paragraphs was more complex. The subject had to select the paragraph from among several which contained relevant details. He had to organize these details and derive from them the main idea to which a given question pertained. Identifying main ideas directly stated in stories was more complex. The subject had to organize information in several paragraphs in an entire story and derive from this specific information the main idea to which a given question was relevant.

The expected order among the skills in the subset, identifying implicitly stated ideas, was identifying cause-effect relationships implied in sentences, identifying main ideas implied in paragraphs, and identifying main ideas implied in stories. The rationale for this expectation was like the rationale for the arrangement of skills pertaining to directly stated ideas. Identifying cause-effect relationships implied in sentences was least complex; it involved inferring an idea on the basis of information in a sentence. In identifying main ideas directly stated in paragraphs, the inference was based on information in a larger amount of material, the paragraph. In identifying main ideas implied in stories, the subject had to integrate and draw information from the largest amount of material, the several paragraphs in a story.

Goodness of Fit of the Simplex Model

Table 6 and Appendix P contain information yielded by the simplex analyses of data describing the expected sequences among skills in the

two subsets, identifying directly stated ideas and details and identifying implicitly stated ideas.

Table 6

Comprehension Skills: Summary of the a_j and q^2 Values

A. Identifying Directly Stated Ideas and Details

Basal reading skill	a_j
16.1 Identifying cause-effect relationships directly stated in sentences	0.586
17.5 Identifying details in stories	1.003
17.3 Identifying main ideas directly stated in paragraphs	1.155
17.1 Identifying main ideas directly stated in stories	1.472
$q^2 = .9689$	

B. Identifying Implicitly Stated Ideas

Basal reading skill	a_j
16.2 Identifying cause-effect relationships implied in sentences	0.710
17.4 Identifying main ideas implied in paragraphs	1.061
17.2 Identifying main ideas implied in stories	1.329
$q^2 = .9180$	

For both subsets, the a_j loadings for the skills increased concomitantly with the expected complexity of the skills. The q^2 values were

.9689 for directly stated ideas and details and .9180 for implicitly stated ideas. For both sets of skills, the respective pairs of observed and reproduced r_{jk} and R_{jk} matrices corresponded reasonably well. Generally, there was a fairly good fit between the simplex model and data describing the skills arranged in the expected sequence within each subset.

Summary

Expected Sequences Among the Basal Reading Skills

Listed below by category of basal reading skills are the expected hierarchical sequences. These sequences were determined, a priori, on the basis of the criterion, level of complexity, defined as degree of inclusiveness.

Phonetic Analysis Skills. -- The expected sequence among the phonetic analysis skills was associating vowel letters and sounds, associating consonant letters and sounds, associating consonant digraphs and sounds, associating consonant blends and sounds, identifying syllables in orally and visually presented short words, identifying syllables in visually presented short words, identifying syllables in orally and visually presented long words, identifying syllables in visually presented long words, and using spelling patterns.

Structural Analysis Skills. -- Translating contractions was not considered in the set of structural analysis skills for the purpose of identifying a sequence. The expected sequence among the remaining structural analysis skills was identifying components of compounds, identifying roots, endings, and suffixes, identifying roots and prefixes, identifying roots and multiple affixes, locating roots by using root-change rules, and changing roots by using root-change rules.

Dictionary Skills. -- Interpreting single pronunciation symbols and interpreting multiple pronunciation symbols were not considered in the set of dictionary skills for the purpose of identifying a sequence. The expected sequence among the remaining dictionary skills was identifying alphabetical sequences based on first letter, identifying alphabetical sequences based on third letter, identifying alphabetical sequences based on first, second, or third letter, using dictionary guide words, finding definitions of single entry words, finding definitions of multiple entry words, selecting definitions of single entry words, and selecting definitions of multiple entry words.

Word Functions Skills. -- Two subsets of skills were involved here: recognizing functions of words and phrases in sentences and specifying the form classes needed to function in given sentence contexts. There was no reason for expecting the four skills within each subset to vary in complexity. Therefore, the ordering of the variables was restricted to the subsets as a whole. Specifying functions was considered to be more complex than recognizing functions.

Comprehension Skills. -- Three subsets of skills were involved here: identifying directly stated ideas and details, identifying implicitly stated ideas, and interpreting figurative language. There was no reason to expect the skills in the figurative language category to differ in complexity; consequently, skills in this subset were considered no further in identifying sequences based on the complexity criterion. The expected sequences among skills within the remaining two subsets were the following.

1. Identifying Directly Stated Ideas and Details: identifying cause-effect relationships directly stated in sentences, identifying details in stories, identifying main ideas directly stated in paragraphs, and identifying main ideas directly stated in stories.

2. Identifying Implicitly Stated Ideas: identifying cause-effect relationships implied in sentences, identifying main ideas implied in paragraphs, and identifying main ideas implied in stories.

Goodness of Fit of the Simplex Model

The simplex model fit fairly well the several sets of data describing the basal reading skills organized in the hierarchical sequences presented above.

CHAPTER 4

INTELLECTUAL PROCESSES RELATED TO BASAL READING SKILLS

The present chapter contains information relevant to the second research objective for the study: to examine intellectual processes related to achievement in selected basal reading skills. The specific research questions were the following.

a. Identification of Processes. -- Which, of a selected set of intellectual processes, are related singly, and in combination, to achievement in each basal reading skill?

b. Extent of Relationship. -- To what extent are the identified processes and combinations of intellectual processes related to achievement in each basal reading skill?

c. Relative Contribution. -- What is the relative contribution, or weighting, of each intellectual process when combinations of intellectual processes are related to achievement in a given basal reading skill?

d. Differences Among Skills. -- Do intellectual processes related to achievement differ among basal reading skills?

Chapters 1 and 2 include details of related research and procedures. Relevant points are restated briefly below.

Logical analyses and empirical investigations have yielded some information about cognitive processes involved in learning to read. Empirical studies reported include Bond and Clymer (1955), Holmes and Singer (1966), Raymond (1955), and Stake (1958). This phase of the present study was designed to explore further the role of selected cognitive processes in the acquisition of basal reading skills.

Subjects were the 639 pupils in the processes-sequences group; this group was composed of four subgroups who were taught at reading instructional levels 2, 3, 4, and 5, respectively. The Scott, Foresman New Basic Readers program was used with these subjects during the school year. Subjects were administered tests to assess 50 basal reading skills; tests #1 - #17 measuring 41 basal reading skills were administered in the fall and again in the spring. Tests #19 and #20

measuring eight skills were administered once, in the spring; and test #18 measuring one basal reading skill was administered only in the fall. The four intellectual processes tests which were selected were administered once in the spring.

The data for the first three research questions, identification of processes, extent of relationship, and relative contribution, were the subjects' scores on the intellectual processes tests, the spring administration of tests #1 - #17, and scores on tests #19 and #20. Step-wise regression analyses were used for the generalized treatment of these data.

Statistics relevant to the first research question, identification of processes, were the partial regression coefficients and the corresponding t ratios obtained from the regression analyses. Data pertaining to the second research question, extent of relationship, were the correlation coefficients and the corresponding coefficients of determination computed in the step-wise regression analyses. When only one intellectual process contributed significantly to explaining the total score variance for each basal reading skill, simple correlation coefficients and their corresponding coefficients of determination were pertinent. When more than one intellectual process contributed, multiple correlation coefficients and their corresponding coefficients of determination were appropriate. Data relevant to the third research question, relative contribution, included the standard partial regression coefficients obtained from the step-wise regression analyses and the percentage contribution of each intellectual process entering the regression equation. After the regression equations were specified by the analyses, the percentage contribution of each X-variable in the equation to the Y-variable was determined by the following procedure. The zero-order r for the particular Y-variable and the X-variable involved was multiplied by the corresponding standard partial regression coefficient (beta weight). Thus, the percentage contributions contained not only the separate coefficients of determination, but also the shared coefficients of determination.

Evidence for the fourth research question, differences among skills, was drawn from summaries of results pertinent to the first three research questions.

The format for this chapter is as follows. The evidence presented in the text is restricted to summaries of relationships indicated by the results of the statistical analyses. In brief, for the first three research questions, the data are presented in tabular form in Appendix Q; no attempt is made in the text to describe verbally the detailed evidence which appears in these tables. For the fourth research question, implications of data relevant to the first three objectives are summarized both in tabular form and in the text. Information about the relationship of the intellectual processes to the basal reading skills is presented separately for each of the five categories of reading skills considered: phonetic analysis skills, structural analysis skills, dictionary skills, word functions skills, and comprehension skills. This information consists of a summary of extant relationships within each category of basal reading skills.

Phonetic Analysis Skills

Table 7 contains a summary of the results of the analyses for the phonetic analysis skills. The most frequent contributor to the phonetic analysis skills was conceptualization. This process contributed to eight of the nine skills: associating consonant letters and sounds, associating consonant digraphs and sounds, associating consonant blends and sounds, using spelling patterns, identifying syllables in orally and visually presented short words, identifying syllables in visually presented short words, identifying syllables in orally and visually presented long words, and identifying syllables in visually presented long words. However, the 1.55% contribution to associating consonant letters and sounds, while statistically significant, may be of little practical significance. The next most prominent process was reasoning, by its contribution to seven of the nine skills: associating vowel letters and sounds, associating consonant digraphs and sounds, using

Table 7

Summary: Contributing Intellectual Processes for the Phonetic Analysis Skills

Basal reading skill	Intellectual processes			
	Associative memory	Conceptualization	Verbal meaning	Reasoning
10.1 Associating vowel letters and sounds	--	--	--	2.68%
10.2 Associating consonant letters and sounds	--	1.55%	--	--
10.3 Associating consonant digraphs and sounds	--	5.59%	1.97%	2.38%
10.8 Associating consonant blends and sounds	--	4.23%	--	--
11.3 Using spelling patterns	--	13.76%	5.39%	14.74%
13.1 Identifying syllables in orally and visually presented short words	--	10.10%	--	9.31%
12.1 Identifying syllables in visually presented short words	--	6.70%	5.33%	9.70%
13.2 Identifying syllables in orally and visually presented long words	--	11.93%	3.43%	13.99%
12.2 Identifying syllables in visually presented long words	--	7.58%	4.95%	17.64%

spelling patterns, identifying syllables in orally and visually presented short words, identifying syllables in visually presented short words, identifying syllables in orally and visually presented long words, and identifying syllables in visually presented long words. Verbal meaning contributed to five skills: associating consonant digraphs and sounds, using spelling patterns, identifying syllables in visually presented short words, identifying syllables in orally and visually presented long words, and identifying syllables in visually presented long words. Associative memory did not contribute to any skill.

Structural Analysis Skills

A summary of the results of the analyses for the category, structural analysis skills, is presented in Table 8. Two processes, conceptualization and reasoning, contributed to all seven of the structural analysis skills: identifying components of compounds, identifying roots, endings, and suffixes, identifying roots and prefixes, identifying roots and multiple affixes, translating contractions, locating roots by using root-change rules, and changing roots by using root-change rules. Associative memory and verbal meaning both contributed to six of the seven skills: identifying components of compounds, identifying roots, endings, and suffixes, identifying roots and prefixes, identifying roots and multiple affixes, locating roots by using root-change rules, and changing roots by using root-change rules. The contribution of associative memory in each instance is rather low and again raises the question of practical significance.

Table 8

Summary: Contributing Intellectual Processes for the Structural Analysis Skills

Basal reading skill	Intellectual processes			
	Associative memory	Conceptualization	Verbal Meaning	Reasoning
3.1 Identifying components of compounds	1.93%	7.01%	10.27%	5.13%
4.1 Identifying roots, endings, and suffixes	4.52%	7.52%	15.17%	14.76%
4.2 Identifying roots and prefixes	3.31%	13.64%	15.07%	14.61%
4.4 Identifying roots and multiple affixes	2.88%	10.13%	8.03%	7.65%
2.1 Translating contractions	--	17.10%	--	14.41%
4.3 Locating roots by using root-change rules	2.26%	20.75%	8.79%	16.43%
1.1 Changing roots by using root-change rules	2.53%	17.44%	6.88%	10.12%

Dictionary Skills

Contained in Table 9 is a summary of the results of the analyses for the dictionary skills. The most prominent contributors to the dictionary skills were the processes, conceptualization and reasoning, which contributed to nine of the ten skills assessed: identifying

Table 9

Summary: Contributing Intellectual Processes for the Dictionary Skills

Basal reading skill	Intellectual processes			
	Associative memory	Conceptualization	Verbal meaning	Reasoning
5.1 Identifying alphabetical sequences based on first letter	2.27%	9.68%	--	12.17%
5.2 Identifying alphabetical sequences based on third letter	3.45%	12.15%	--	18.73%
5.3 Identifying alphabetical sequences based on first, second, or third letter	2.04%	13.50%	5.33%	8.90%
6.3 Using dictionary guide words	--	9.59%	6.99%	5.72%
7.1 Finding definitions of single entry words	1.83%	5.71%	7.34%	5.17%
7.2 Finding definitions of multiple entry words	3.22%	10.09%	13.02%	9.96%
8.1 Selecting definitions of single entry words	--	3.59%	--	7.86%
8.2 Selecting definitions of multiple entry words	--	4.66%	5.74%	12.51%

Table 9 (Continued)

Basal reading skill	Intellectual processes			
	Associative memory	Conceptualization	Verbal meaning	Reasoning
9.1 Interpreting single pronunciation symbols	--	10.24%	8.91%	13.13%
9.2 Interpreting multiple pronunciation symbols	--	--	5.88%	--

alphabetical sequences based on first letter, identifying alphabetical sequences based on third letter, identifying alphabetical sequences based on first, second, or third letter, using dictionary guide words, finding definitions of single entry words, finding definitions of multiple entry words, selecting definitions of single entry words, selecting definitions of multiple entry words, and interpreting single pronunciation symbols. Verbal meaning was a contributor to seven skills: identifying alphabetical sequences based on first, second, or third letter, using dictionary guide words, finding definitions of single entry words, finding definitions of multiple entry words, selecting definitions of multiple entry words, interpreting single pronunciation symbols, and interpreting multiple pronunciation symbols. Associative memory contributed to five skills: identifying alphabetical sequences based on first letter, identifying alphabetical sequences based on third letter, identifying alphabetical sequences based on first, second, or third letter, finding definitions of single entry words, and finding definitions of multiple entry words.

Word Functions Skills

Summarized in Table 10 are the results of the analyses for the category of word functions skills. For the word functions skills, verbal meaning and reasoning both contributed to all eight skills: recognizing functions of nouns, recognizing functions of verbs, recognizing functions of adjectives, recognizing functions of adverbs, specifying functions of nouns, specifying functions of verbs, specifying functions of adjectives, and specifying functions of adverbs. The next most frequent contributor was conceptualization which contributed to six skills: recognizing functions of nouns, recognizing functions of verbs, recognizing functions of adjectives, recognizing functions of adverbs, specifying functions of verbs, and specifying functions of adjectives. Associative memory contributed to only two skills: recognizing functions of verbs and recognizing functions of adverbs.

Table 10

Summary: Contributing Intellectual Processes for the Word Functions Skills

Basal reading skill	Intellectual processes			
	Associative memory	Conceptualization	Verbal meaning	Reasoning
14.1 Recognizing functions of nouns	--	7.58%	11.79%	12.12%
14.2 Recognizing functions of verbs	2.07%	9.90%	13.77%	14.99%
14.3 Recognizing functions of adjectives	--	10.16%	8.89%	11.21%
14.4 Recognizing functions of adverbs	3.07%	7.96%	8.41%	12.37%

Table 10 (Continued)

Basal reading skill	Intellectual processes			
	Associative memory	Conceptualization	Verbal meaning	Reasoning
15.1 Specifying functions of nouns	--	--	10.38%	16.91%
15.2 Specifying functions of verbs	--	6.94%	8.39%	14.40%
15.3 Specifying functions of adjectives	--	6.10%	9.80%	12.96%
15.4 Specifying functions of adverbs	--	--	5.01%	7.87%

Comprehension Skills

Table 11 contains a summary of the results of analyses for the comprehension skills. Highest in frequency of contribution to the comprehension skills were two processes, verbal meaning and reasoning, which contributed to all fifteen of the comprehension skills: identifying cause-effect relationships directly stated in sentences, identifying main ideas directly stated in sentences, identifying main ideas directly stated in stories, identifying cause-effect relationships implied in sentences, identifying main ideas implied in paragraphs, identifying main ideas implied in stories, identifying details in stories, interpreting similes, interpreting idioms, interpreting hyperboles, interpreting personification, interpreting metaphors, predicting outcomes and actions[1], discriminating between fact and fiction[2], and discriminating between fact and opinion[3]. These two processes were followed

[1,2,3] These relationships are cited from Myers (1967).

closely by conceptualization, which contributed to fourteen of the fifteen skills: identifying cause-effect relationships directly stated in sentences, identifying main ideas directly stated in sentences, identifying main ideas directly stated in stories, identifying cause-effect relationships implied in sentences, identifying main ideas implied in paragraphs, identifying main ideas implied in stories, identifying details in stories, interpreting idioms, interpreting hyperboles, interpreting personification, interpreting metaphors, predicting outcomes and actions[1], discriminating between fact and fiction[2], and discriminating between fact and opinion[3]. Associative memory was a contributor to five comprehension skills: identifying main ideas directly stated in stories, identifying main ideas implied in stories, identifying details in stories, predicting outcomes and actions[1], and discriminating between fact and fiction[2].

Table 11

Summary: Contributing Intellectual Processes for the Comprehension Skills

Basal reading skill	Intellectual processes			
	Associative memory	Conceptualization	Verbal meaning	Reasoning
16.1 Identifying cause-effect relationships directly stated in sentences	--	8.75%	8.18%	7.09%
17.3 Identifying main ideas directly stated in sentences	--	9.66%	10.81%	15.06%
17.1 Identifying main ideas directly stated in stories	2.17%	10.98%	11.43%	13.05%

[1,2,3]These relationships are cited from Myers (1967).

Table 11 (Continued)

Basal reading skill	Intellectual processes			
	Associative memory	Conceptualization	Verbal meaning	Reasoning
16.2 Identifying cause-effect relationships implied in sentences	--	10.81%	15.06%	7.77%
17.4 Identifying main ideas implied in paragraphs	--	8.27%	15.10%	14.89%
17.2 Identifying main ideas implied in stories	1.91%	7.71%	10.63%	14.43%
17.5 Identifying details in stories	2.62%	11.36%	13.76%	16.84%
19.1 Interpreting similes	--	--	11.18%	8.45%
19.2 Interpreting idioms	--	9.08%	16.64%	11.63%
19.3 Interpreting hyperboles	--	4.13%	5.93%	11.82%
19.4 Interpreting personification	--	4.00%	12.46%	8.16%
19.5 Interpreting metaphors	--	6.23%	15.66%	12.92%
20.1 Predicting outcomes and actions[a]	2.59%	3.23%	14.62%	10.25%
20.2 Discriminating between fact and fiction[b]	2.68%	5.10%	13.67%	9.75%

Table 11 (Continued)

Basal reading skill	Intellectual Processes			
	Associative memory	Conceptualization	Verbal meaning	Reasoning
20.3 Discriminating between fact and opinion[c]	--	4.99%	11.75%	12.50%

[a,b,c]The results presented herein for these three critical reading skills are cited from Myers (1967).

Summary of Results

Phonetic Analysis Skills

Conceptualization contributed to eight of the nine skills assessed, and reasoning was a contributor to seven phonetic analysis skills. Verbal meaning was related to five skills while associative memory was a contributor to none of the skills in this category.

Structural Analysis Skills

All four of the intellectual processes -- associative memory, conceptualization, verbal meaning, and reasoning -- were prominent contributors to the skills assessed in this category. Conceptualization and reasoning contributed to all seven skills, followed by verbal meaning and associative memory which each contributed to six skills.

Dictionary Skills

Two processes, conceptualization and reasoning, were contributors to the same nine of the ten skills assessed. Verbal meaning and associative memory contributed to seven and five skills, respectively; however, these two processes were related to the same skills in only three instances.

Word Functions Skills

Verbal meaning and reasoning were the most prominent contributors to skills in this category, with each of these processes contributing to all eight skills assessed. Conceptualization was related to six of the eight skills while associative memory contributed to only two skills.

Comprehension Skills

Verbal meaning, reasoning, and conceptualization were the primary contributors to this category of skills. Verbal meaning and reasoning both were related to all fifteen skills assessed, and conceptualization was a contributing process to fourteen comprehension skills. Associative memory contributed to only three of the skills in this category.

CHAPTER 5

TRENDS IN ACHIEVEMENT OVER READING INSTRUCTIONAL LEVELS

The focus in this chapter is on research objective 3: to describe trends in achievement of basal reading skills over reading instructional levels 2, 3, 4, and 5. The retarded, normal, and superior groups were considered separately. The specific research questions were the following.

a. Presence of a Trend. -- For a given basal reading skill, is there a trend in the means at reading instructional levels 2, 3, 4, and 5?

b. Nature of the Trend. -- For a given basal reading skill, what is the nature of the trend of the means at reading instructional levels 2, 3, 4, and 5?

Related research and procedures are considered in detail in Chapters 1 and 2. Pertinent points are summarized below.

Several investigators studied intellectually retarded subjects' progress in reading over periods ranging from one to four years. These investigators included Bradway (1939), Engle (1942), Janes (1953), McElwee (1931), Murdoch (1918), Nemzek and Meixner (1939), and Walsh (1938). Both Dunn (1954) and Kirk (1964) reviewed and evaluated these studies. The present investigators did not locate work completed since these earlier studies. Nor did the investigators locate studies of long-term trends in normal and superior pupils' reading achievement. In this part of the present investigation, the intent was to obtain evidence about trends in normal and superior subjects' reading achievement as well as to extend previous studies of trends in retarded subjects' reading achievement.

Subjects in this phase of the project were the 108 retarded subjects, 108 normal subjects, and 92 superior subjects. Within each group, there was an equal number of subjects at the four reading instructional levels.

The subjects were taught at the reading instructional levels 2, 3, 4, or 5 in the Scott, Foresman New Basic Readers program. They were administered tests to assess 50 basal reading skills taught in the basal reading program. Tests #1-#17 measuring 41 basal reading skills were administered in the fall and in the spring. Tests #19 and #20 measuring eight basal reading skills were administered only in the spring. Test #18 measuring one basal reading skill was administered only in the fall.

Data used to assess trends were subjects' scores on the fall administration of tests #1-#17 and subjects' scores on tests #18, #19, and #20. These data were analyzed in this way. For the retarded, normal, and superior groups separately, data for each skill were processed in a single factor analysis of variance. The variation among reading instructional levels was partitioned into linear, and, where degrees of freedom were available, quadratic and cubic components.

Information in this chapter is presented in separate sections for the retarded, normal, and superior groups, respectively. Each section contains information for skills in the six categories: identifying words at sight, phonetic analysis, structural analysis, dictionary, word functions, and comprehension. For each category of skills, the trends are described for each skill in the category. A general summary is presented after data are considered separately for the retarded, normal, and superior groups. Appendix R contains the results of the statistical analyses. The text includes descriptive statistics and relationships indicated by the statistical analyses. Figures 2 through 19 portraying these relationships are at the end of the chapter.

Retarded Group

Identifying Words at Sight

Table 12 includes summary data for the trend in the retarded subjects' means for identifying words at sight. This trend is illustrated in Figure 2.

The trend of the means was significant. It was linear in form. Subjects at reading instructional level 2 attained about 28% of the possible score while those at reading instructional level 5 attained about 51%.

Table 12

Summary: Trends in Achievement by the Retarded Group -- Identifying Words at Sight

Basal reading skill/ Possible score	Means by R.I.L.				Trends		
	2	3	4	5	L	Q	C
18.1 Identifying words at sight/48	13.30	15.52	20.00	24.52	S	NS	NS

Phonetic Analysis Skills

Table 13 contains data summarizing trends in the retarded subjects' mean scores for the phonetic analysis skills. Figure 3 consists of illustrations of these trends. Specific relationships for each skill are described below.

Associating Vowel Letters and Sounds. -- At reading instructional level 2, the retarded subjects attained about 67% of the total possible score. At subsequent reading instructional levels, they did not show a significant change in level of achievement on associating vowel letters and sounds; i.e., the trend of the means was not significant.

Associating Consonant Letters and Sounds. -- At reading instructional level 2, the retarded subjects achieved about 84% of the total possible score. Thereafter, their scores on associating consonant letters and sounds did not change significantly.

Table 13

Summary: Trends in Achievement by the Retarded Group -- Phonetic Analysis Skills

Basal reading skill/ Possible score	Means by R.I.L. 2	3	4	5	Trends L	Q	C
10.1 Associating vowel letters and sounds/10	6.70	7.04	6.85	7.07	NS	NS	NS
10.2 Associating consonant letters and sounds/20	16.81	16.74	16.48	16.70	NS	NS	NS
10.3 Associating consonant digraphs and sounds/6	3.44	3.44	3.67	3.63	NS	NS	NS
10.8 Associating consonant blends and sounds/22	16.04	14.89	15.74	15.56	NS	NS	NS
11.3 Using spelling patterns/34	10.96	10.59	14.00	14.11	S	NS	NS
13.1 Identifying syllables in orally and visually presented short words/16	--	10.67	11.19	12.67	NS	NS	--
12.1 Identifying syllables in visually presented short words/16	--	9.15	10.11	11.41	S	NS	--
13.2 Identifying syllables in orally and visually presented long words/16	--	2.85	3.41	4.07	NS	NS	--
12.2 Identifying syllables in visually presented long words/16	--	2.33	3.22	3.70	NS	NS	--

Associating Consonant Digraphs and Sounds. -- The retarded subjects at reading instructional level 2 achieved about 57% of the total possible score on associating consonant digraphs and sounds. Their level of achievement did not change significantly at subsequent reading instructional levels.

Associating Consonant Blends and Sounds. -- At reading instructional level 2, the retarded subjects achieved about 73% of the total possible score for associating consonant blends and sounds. No significant changes in achievement occurred at subsequent reading instructional levels.

Using Spelling Patterns. -- The retarded subjects at reading instructional levels 2 and 3 attained about 32% of the total possible score on using spelling patterns. Then, an increment occurred at reading instructional levels 4 and 5. The trend over the four reading instructional levels was generally linear. Subjects at reading instructional level 5 attained about 41% of the possible score.

Identifying Syllables in Orally and Visually Presented Short Words. -- At reading instructional level 3, the retarded subjects attained about 67% of the total possible score for identifying syllables in orally and visually presented short words. Thereafter, the scores did not change significantly.

Identifying Syllables in Visually Presented Short Words. -- On identifying syllables in visually presented short words, the retarded subjects at reading instructional level 3 attained about 57% of the total possible score. Subsequently, the scores changed significantly. Generally, the trend over the three reading instructional levels was linear.

Identifying Syllables in Orally and Visually Presented Long Words. -- At reading instructional level 3, the retarded group attained about 18% of the total possible score. Subsequently, significant changes did not occur in scores for identifying syllables in orally and visually presented long words.

Identifying Syllables in Visually Presented Long Words. -- Initially, the retarded group at reading instructional level 3 attained about 15% of the total possible score. Thereafter, no significant changes occurred in scores on identifying syllables in visually presented long words.

Structural Analysis Skills

Information about trends in the retarded subjects' means for the structural analysis skills is summarized in Table 14 . Figure 4 contains graphs. Relationships for each skill are described below.

Table 14

Summary: Trends in Achievement by the Retarded Group -- Structural Analysis Skills

Basal reading skill/ Possible score	Means by R.I.L.				Trends		
	2	3	4	5	L	Q	C
3.1 Identifying components of compounds/24	14.85	18.11	20.59	21.22	S	NS	NS
4.1 Identifying roots, endings, and suffixes/12	5.07	5.85	7.26	7.59	S	NS	NS
4.2 Identifying roots and prefixes/10	1.56	1.37	3.41	3.41	S	NS	NS
4.4 Identifying roots and multiple affixes/8	2.52	3.00	3.89	3.81	S	NS	NS
2.1 Translating contractions/12	3.56	4.81	6.59	6.44	S	NS	NS
4.3 Locating roots by using root-change rules/14	2.78	3.67	5.26	5.89	S	NS	NS
1.1 Changing roots by using root-change rules/14	1.22	1.26	2.15	2.93	S	NS	NS

Identifying Components of Compounds. -- At reading instructional level 2, the retarded subjects attained about 62% of the possible score for identifying components of compound words. At reading instructional level 5, they attained about 88%. The trend of the means over the four reading instructional levels was significant. The trend was generally linear.

Identifying Roots, Endings, and Suffixes. -- At the initial point, the retarded subjects attained about 42% of the possible score for identifying roots, endings, and suffixes; at the final point, they attained about 63%. A significant trend was present in the means over the four reading instructional levels. The trend was primarily linear.

Identifying Roots and Prefixes. -- The retarded subjects at reading instructional level 2 attained about 16% of the total possible score for identifying roots and prefixes; at reading instructional level 5, they attained about 34%. Over the four reading instructional levels, a significant trend in the means occurred. This trend was generally linear.

Identifying Roots and Multiple Affixes. -- The retarded subjects' initial level of attainment on the skill, identifying roots and multiple affixes, was about 32%; their final level was about 48%. The trend of the means over the four reading instructional levels was significant. This trend was generally linear.

Translating Contractions. -- The retarded subjects at reading instructional level 2 attained about 30% of the total possible score for translating contractions, while at reading instructional level 5, they attained approximately 54%. A significant trend was present in the means over the four reading instructional levels. The trend was generally linear.

Locating Roots by Using Root-change Rules. -- Initially, the retarded subjects attained about 20% of the total possible score on locating roots by using root-change rules. The final attainment was about 42%. The trend in the means over the four reading instructional levels was significant. Generally, the trend was linear.

Changing Roots by Using Root-change Rules. -- The retarded subjects at reading instructional level 2 attained about 9% of the total possible score for changing roots by using root-change rules. The subjects at reading instructional level 5 attained about 21%. A significant trend was present in the means for the four reading instructional levels. This trend was primarily linear.

Dictionary Skills

Trends in the retarded subjects' achievement in the dictionary skills over the several instructional levels are described below. Table 15 contains a summary of the results of the statistical analyses. Figure 5 consists of graphs portraying relationships for each skill. These relationships are described below.

Table 15

Summary: Trends in Achievement by the Retarded Group -- Dictionary Skills

Basal reading skill/ Possible score	Means by R.I.L.				Trends		
	2	3	4	5	L	Q	C
5.1 Identifying alphabetical sequences based on first letter/12	--	6.93	8.85	9.52	S	NS	--
5.2 Identifying alphabetical sequences based on third letter/12	--	3.85	6.41	6.63	S	NS	--
5.3 Identifying alphabetical sequences based on first, second, or third letter/12	--	2.44	5.59	5.44	S	NS	--
6.3 Using dictionary guide words/30	--	5.59	7.89	10.07	S	NS	--
7.1 Finding definitions of single entry words/12	--	3.37	4.07	6.44	S	NS	--

Table 15 (Continued)

Basal reading skill/ Possible score	Means by R.I.L. 2	3	4	5	Trends L	Q	C
7.2 Finding definitions of multiple entry words/16	--	3.56	4.78	7.56	S	NS	--
8.1 Selecting definitions of single entry words/16	--	--	5.63	6.48	NS	--	--
8.2 Selecting definitions of multiple entry words/12	--	--	3.81	4.11	NS	--	--
9.1 Interpreting single pronunciation symbols/16	--	4.48	4.85	5.41	NS	NS	--
9.2 Interpreting multiple pronunciation symbols/8	--	1.63	1.70	1.96	NS	NS	--

Identifying Alphabetical Sequences Based on First Letter. -- At reading instructional level 3, the retarded subjects attained about 58% of the possible score for identifying alphabetical sequences based on first letter. At reading instructional level 5, the average attainment was about 79%. The trend of the means over the three reading instructional levels was significant. This trend was generally linear.

Identifying Alphabetical Sequences Based on Third Letter. -- Initially, the retarded subjects attained about 32% of the total possible score for identifying alphabetical sequences based on third letter. At the final reading instructional level, the group attained about 55% of the possible score. A significant trend was apparent in the means for the three reading instructional levels. The trend was generally linear.

Identifying Alphabetical Sequences Based on First, Second, or Third Letter. -- The retarded subjects at reading instructional level 3 attained about 20% while the subjects at reading instructional level 5 attained about 45% of the possible score on identifying alphabetical

sequences based on first, second, or third letter. The trend of the means was significant. It was generally linear.

Using Dictionary Guide Words. -- The retarded subjects' initial average attainment was about 19%; their final average attainment was about 34%. The trend of the means for using dictionary guide words was significant. This trend was linear.

Finding Definitions of Single Entry Words. -- The retarded subjects at reading instructional level 3 attained about 28% while the subjects at reading instructional level 5 attained about 54% of the total possible score on finding definitions of single entry words. The trend of the means was significant. Generally, the trend was linear.

Finding Definitions of Multiple Entry Words. -- At reading instructional level 3, the retarded subjects attained about 22% of the possible score for finding definitions of multiple entry words. At reading instructional level 5, the subjects attained about 47%. A significant trend was present. This trend was generally linear.

Selecting Definitions of Single Entry Words. -- The retarded subjects at reading instructional level 4 attained about 35% of the total possible score. There was no significant trend in the means for selecting definitions of single entry words.

Selecting Definitions of Multiple Entry Words. -- At reading instructional level 4, the average attainment was approximately 32%. No significant trend was present in the retarded subjects' means for selecting definitions of multiple entry words.

Interpreting Single Pronunciation Symbols. -- The subjects' initial average attainment for interpreting single pronunciation symbols was about 28%. No significant trend was present in the retarded subjects' means for interpreting single pronunciation symbols.

Interpreting Multiple Pronunciation Symbols. -- The retarded subjects at reading instructional level 3 attained about 20% of the total possible score. No significant trend was present in the means for interpreting multiple pronunciation symbols.

Word Functions Skills

Data reflecting retarded subjects' trends in achievement in the word functions skills are in Table 16 and Figure 6 . These data are described below.

Table 16

Summary: Trends in Achievement by the Retarded Group -- Word Functions Skills

Basal reading skill/ Possible score	Means by R.I.L.				Trends		
	2	3	4	5	L	Q	C
14.1 Recognizing functions of nouns/12	2.52	3.52	5.37	4.96	S	NS	NS
14.2 Recognizing functions of verbs/12	2.30	2.78	5.07	4.07	S	NS	S
14.3 Recognizing functions of adjectives/12	2.15	2.74	4.00	4.63	S	NS	NS
14.4 Recognizing functions of adverbs/12	2.07	2.33	3.37	3.63	S	NS	NS
15.1 Specifying functions of nouns/12	2.19	2.63	3.56	3.74	S	NS	NS
15.2 Specifying functions of verbs/12	2.19	2.67	3.67	3.74	S	NS	NS
15.3 Specifying functions of adjectives/12	1.37	2.37	3.48	3.67	S	NS	NS
15.4 Specifying functions of adverbs/12	1.59	2.52	2.93	2.56	NS	NS	NS

Recognizing Functions of Nouns. -- Retarded subjects at reading instructional level 2 attained about 21% of the possible score for recognizing functions of nouns while those at reading instructional level 5 attained about 41%. The trend in the means was significant. It was primarily linear in form.

Recognizing Functions of Verbs. -- The trend in the means for recognizing functions of verbs was significant. It was cubic in form. The percentages of the possible score attained by the subjects at the four reading instructional levels were about 19%, 23%, 42%, and 34%, respectively. The pattern, then, was small increment, large increment, decrement.

Recognizing Functions of Adjectives. -- At reading instructional level 2, retarded subjects attained about 18% of the possible score for recognizing functions of adjectives. Those at reading instructional level 5 attained about 39%. The trend of the means over the four reading instructional levels was significant. It was linear in form.

Recognizing Functions of Adverbs. -- Subjects at reading instructional level 2 attained about 17% of the possible score for recognizing functions of adverbs while those at reading instructional level 5 attained about 30%. The trend of the means was significant. It was generally linear in shape.

Specifying Functions of Nouns. -- For specifying functions of nouns, the trend of the retarded subjects' means was significant. The trend was primarily linear in shape. Subjects at reading instructional level 2 attained about 18% of the possible score while those at reading instructional level 5 attained about 31%.

Specifying Functions of Verbs. -- Retarded subjects at reading instructional level 2 attained about 18% of the score possible on specifying functions of verbs. Those at reading instructional level 5 attained about 31%. The trend of the means was significant. It was linear in form.

Specifying Functions of Adjectives. -- At reading instructional level 2, the retarded subjects attained about 11% of the possible score for specifying functions of adjectives; at reading instructional level 5, about 31%. A significant linear trend was present among the means.

Specifying Functions of Adverbs. -- At reading instructional level 2, the retarded subjects attained about 13% of the possible score. Subsequently, significant increments did not occur: the trend of the means did not depart significantly from zero.

Comprehension Skills

Data reflecting trends in the retarded subjects' achievement in the comprehension skills are presented in Table 17 and Figure 7. Relationships for each skill are presented below.

Table 17

Summary: Trends in Achievement by the Retarded Group -- Comprehension Skills

Basal reading skill/ Possible score	Means by R.I.L.				Trends		
	2	3	4	5	L	Q	C
16.1 Identifying cause-effect relationships directly stated in sentences/12	6.63	6.52	8.67	8.89	S	NS	S
17.3 Identifying main ideas directly stated in paragraphs/12	3.63	4.56	5.89	6.30	S	NS	NS
17.1 Identifying main ideas directly stated in stories/12	2.96	3.63	4.07	5.74	S	NS	NS
16.2 Identifying cause-effect relationships implied in sentences/12	5.78	6.96	8.37	8.70	S	NS	NS
17.4 Identifying main ideas implied in paragraphs/12	3.52	4.04	5.52	5.78	S	NS	NS
17.2 Identifying main ideas implied in stories/12	3.85	4.78	6.74	6.85	S	NS	NS
17.5 Identifying details in stories/24	6.48	8.78	10.85	11.30	S	NS	NS
19.1 Interpreting similes/8	5.33	5.44	5.89	6.22	S	NS	NS

Table 17 (Continued)

Basal reading skill/ Possible score	Means by R.I.L.				Trends		
	2	3	4	5	L	Q	C
19.2 Interpreting idioms/8	3.70	3.89	4.78	5.41	S	NS	NS
19.3 Interpreting hyperboles/8	4.74	5.11	5.00	4.89	NS	NS	NS
19.4 Interpreting personification/8	3.85	5.07	6.15	5.74	S	NS	NS
19.5 Interpreting metaphors/8	2.85	3.93	4.74	5.63	S	NS	NS
20.1 Predicting outcomes and actions[a]/14	5.48	7.26	6.48	8.41	S	NS	S
20.2 Discriminating between fact and fiction[b]/14	6.15	8.44	7.26	10.00	S	NS	S
20.3 Discriminating between fact and opinion[c]/14	4.78	5.19	5.56	6.59	S	NS	NS

[a,b,c]The information presented here about trends for these three critical reading skills was based on data obtained by Myers (1967) in her study conducted in conjunction with the present project.

Identifying Cause-effect Relationships Directly Stated in Sentences. -- A significant cubic trend was present in the means for identifying cause-effect relationships directly stated in sentences. The percentages of the possible score attained by the subjects at the respective reading instructional levels were approximately 55%, 54%, 72%, and 74%. The pattern was the following: apparently no increment occurred between reading instructional levels 2 and 3 and between reading instructional levels 4 and 5 while an increment was present between reading instructional levels 3 and 4.

Identifying Main Ideas Directly Stated in Paragraphs. -- Retarded subjects at reading instructional level 2 attained about 30% of the possible score for identifying main ideas directly stated in paragraphs while those at reading instructional level 5 attained about 53%. The trend of the means was significant. It was primarily linear in form.

Identifying Main Ideas Directly Stated in Stories. -- The retarded subjects at reading instructional level 2 attained about 25% while those at reading instructional level 5 attained about 48% of the score possible for identifying main ideas directly stated in stories. The trend of the means was significant. It was primarily linear in form.

Identifying Cause-effect Relationships Implied in Sentences. -- A significant linear trend was present among the means for identifying cause-effect relationships implied in sentences. The subjects at reading instructional level 2 attained about 43% of the possible score while the subjects at reading instructional level 5 attained about 73%.

Identifying Main Ideas Implied in Paragraphs. -- Subjects at reading instructional level 2 attained about 29% of the possible score while those at reading instructional level 5 attained about 48%. The trend of the means was significant. It was primarily linear.

Identifying Main Ideas Implied in Stories. -- Retarded subjects at reading instructional level 2 attained about 32% of the score possible for identifying main ideas implied in stories. The subjects at reading instructional level 5 attained about 57%. The trend of the means was significant. It was generally linear in shape.

Identifying Details in Stories. -- At reading instructional level 2, the retarded subjects attained about 27% of the possible score for identifying details in stories. Those at reading instructional level 5 attained about 47%. The trend of the means was significant. The trend was primarily linear.

Interpreting Similes. -- Retarded subjects at reading instructional level 2 attained about 67% of the score possible for interpreting similes. Those at reading instructional level 5 attained about 78%. The trend of the means was significant. It was generally linear in form.

Interpreting Idioms. -- At reading instructional level 2, the retarded subjects attained approximately 46% of the possible score for interpreting idioms. Those at reading instructional level 5 attained about 68%. The trend of the means was significant. It was primarily linear.

Interpreting Hyperboles. -- At reading instructional level 2, the retarded subjects attained about 59% of the score possible for interpreting hyperboles. The trend of the means did not differ significantly from zero.

Interpreting Personification. -- The retarded subjects at reading instructional level 2 attained about 48% of the score possible for interpreting personification. Those at reading instructional level 5 attained approximately 72%. The trend of the means was significant. It was generally linear in shape.

Interpreting Metaphors. -- At reading instructional level 2, the retarded subjects attained about 36% of the score possible for interpreting metaphors. At reading instructional level 5, they attained about 70%. The trend of the means was significant. It was linear in shape.

Myers' (1967) data indicated that trends in the retarded subjects' means of the critical reading skills were significant. Table 17 and Figure 7 contain the pertinent data. These data are described in more detail below.

Predicting Outcomes and Actions. -- The trend of the retarded subjects' means for predicting outcomes and actions was significant. It was cubic in shape. At the four reading instructional levels, the percentages of the possible score which the subjects attained were approximately 39%, 52%, 46%, and 60%, respectively. And so, the pattern was increment, decrement, increment.

Discriminating Between Fact and Fiction. -- Again, the trend of the retarded subjects' means was significant and cubic. The means at the four respective reading instructional levels were approximately 44%, 60%, 52%, and 71%. The pattern was increment, decrement, increment.

Discriminating Between Fact and Opinion. -- The trend of the retarded subjects' means on discriminating between fact and opinion was significantly linear. The percentages of the total possible score which the subjects attained at reading instructional levels 2 and 5 were about 34% and 47%, respectively.

Normal Group

Identifying Words at Sight

Table 18 and Figure 8 contain data reflecting the trend in the normal group's achievement in identifying words at sight. Subjects at reading instructional level 2 attained about 24% of the possible score for identifying words at sight while those at reading instructional level 5 attained about 55%. The trend of the means was significant. It was linear in shape.

Table 18

Summary: Trends in Achievement by the Normal Group -- Identifying Words at Sight

Basal reading skill/ Possible score	Means by R.I.L.				Trends		
	2	3	4	5	L	Q	C
18.1 Identifying words at sight/48	11.63	17.22	22.04	26.44	S	NS	NS

Phonetic Analysis Skills

Presented in Table 19 are data summarizing the trends in the normal subjects' mean scores for the phonetic analysis skills. These data are portrayed graphically in Figure 9. Specific relationships are described below.

Associating Vowel Letters and Sounds. -- The normal subjects' mean at reading instructional level 2 was about 70% of the total score possible. No significant trend was present in the means for associating vowel letters and sounds.

Associating Consonant Letters and Sounds. -- No significant trend was evident in the means for associating consonant letters and sounds. At reading instructional level 2, the normal subjects averaged about 87% of the total possible score.

Associating Consonant Digraphs and Sounds. -- A significant trend was present in the means for associating consonant digraphs and sounds. It was cubic. The normal subjects' average attainments of the possible score at the four reading instructional levels were approximately 63%, 54%, 66%, and 62%, respectively. The pattern of the means was decrement, increment, decrement.

Associating Consonant Blends and Sounds. -- The normal subjects attained about 70% of the total possible score at reading instructional level 2 and about 83% at reading instructional level 5. A significant trend was present in the four means for associating consonant blends and sounds. It was generally linear.

Table 19

Summary: Trends in Achievement by the Normal Group -- Phonetic Analysis Skills

Basal reading skill/ Possible score	Means by R.I.L.				Trends		
	2	3	4	5	L	Q	C
10.1 Associating vowel letters and sounds/10	6.96	7.67	7.30	7.56	NS	NS	NS
10.2 Associating consonant letters and sounds/20	17.33	17.78	16.85	17.63	NS	NS	NS
10.3 Associating consonant digraphs and sounds/6	3.78	3.26	3.93	3.70	NS	NS	S
10.8 Associating consonant blends and sounds/22	15.33	16.52	16.52	18.22	S	NS	NS
11.3 Using spelling patterns/34	12.00	15.63	17.07	17.93	S	NS	NS
13.1 Identifying syllables in orally and visually presented short words/16	--	12.52	13.63	15.00	S	NS	--
12.1 Identifying syllables in visually presented short words/16	--	9.74	12.30	13.33	S	NS	--
13.2 Identifying syllables in orally and visually presented long words/16	--	7.93	6.63	10.11	NS	S	--
12.2 Identifying syllables in visually presented long words/16	--	4.07	4.52	6.61	S	NS	--

Using Spelling Patterns. -- At reading instructional level 2, the normal subjects attained about 35% of the total possible score while the subjects at reading instructional level 5 attained about 53%. The trend of the means for using spelling patterns was significant. The trend was primarily linear.

Identifying Syllables in Orally and Visually Presented Short Words. -- At reading instructional level 3, the normal subjects attained about 78% of the total possible score while at reading instructional level 5 the subjects attained about 94%. A significant trend was present in the means for identifying syllables in orally and visually presented short words. This trend was linear.

Identifying Syllables in Visually Presented Short Words. -- A significant linear trend was present among the normal subjects' means for identifying syllables in visually presented short words. At reading instructional level 3, the mean attainment was about 61%; at reading instructional level 5, the mean attainment was about 83%.

Identifying Syllables in Orally and Visually Presented Long Words. -- The average attainments at reading instructional levels 3, 4, and 5 were approximately 50%, 41%, and 63%, respectively. A significant quadratic trend was present. The pattern for identifying syllables in orally and visually presented long words was a decrement followed by an increment.

Identifying Syllables in Visually Presented Long Words. -- A significant linear trend was present in the means for identifying syllables in visually presented long words. At reading instructional level 3, the normal group attained about 25% of the total possible score; the mean attainment at reading instructional level 5 was about 41%.

Structural Analysis Skills

The data summarized in Table 20 portray the results of the trend analyses of the normal groups' means for the structural analysis skills. Corresponding graphs are in Figure 10 . Relationships for each skill are described in detail below.

Identifying Components of Compounds. -- At reading instructional level 2, the normal subjects attained about 53% of the possible score for identifying components of compounds. The subjects at reading instructional level 5 attained about 97%. The trend of the means was significant. It was linear in form.

Table 20

Summary: Trends in Achievement by the Normal Group -- Structural Analysis Skills

Basal reading skill/ Possible score	Means by R.I.L.				Trends		
	2	3	4	5	L	Q	C
3.1 Identifying components of compounds/24	12.67	17.26	19.74	23.30	S	NS	NS
4.1 Identifying roots, endings, and suffixes/12	5.19	6.74	6.81	9.33	S	NS	S
4.2 Identifying roots and prefixes/10	0.48	2.41	4.78	7.59	S	NS	NS
4.4 Identifying roots and multiple affixes/8	1.74	3.33	4.44	6.11	S	NS	NS
2.1 Translating contractions/12	5.33	4.89	7.81	9.74	S	S	NS
4.3 Locating roots by using root-change rules/14	2.15	5.22	6.63	10.81	S	NS	NS
1.1 Changing roots by using root-change rules/14	0.44	2.07	3.41	6.22	S	NS	NS

Identifying Roots, Endings, and Suffixes. -- For the four reading instructional levels, the percentages which the normal subjects attained were approximately 43%, 56%, 57%, and 78%, respectively. A significant cubic trend was present for identifying roots, endings, and suffixes. Increments were present between reading instructional levels 2 and 3 and reading instructional levels 4 and 5, while no apparent change occurred between reading instructional levels 3 and 4.

Identifying Roots and Prefixes. -- The normal subjects at reading instructional level 2 achieved about 5% of the total possible score for identifying roots and prefixes. The subjects at reading instructional level 5 attained about 76%. The trend of the means over the four instructional levels was significant. It was linear in shape.

Identifying Roots and Multiple Affixes. -- For the skill, identifying roots and multiple affixes, the normal subjects at reading instructional level 2 achieved about 22% of the total possible score while the subjects at reading instructional level 5 achieved about 76%. The trend was significant; it was linear in shape.

Translating Contractions. -- A significant quadratic trend was present in the normal subjects' means for translating contractions. The levels of attainment of the total possible score were approximately 44%, 41%, 65%, and 81% for the respective four reading instructional levels. Between reading instructional levels 2 and 3, the subjects did not differ or showed slight decrement; then, between reading instructional levels 3, 4, and 5, they showed positive increments.

Locating Roots by Using Root-change Rules. -- The normal subjects at reading instructional level 2 attained about 15% of the total score possible on locating roots by using root-change rules; at reading instructional level 5, the subjects attained about 77%. The trend of the means was significant. It was linear in shape.

Changing Roots by Using Root-change Rules. -- The normal subjects at reading instructional level 2 attained about 3% while the subjects at reading instructional level 5 achieved about 44% of the score possible for changing roots by using root-change rules. The trend of the means differed significantly from zero. The trend was linear in nature.

Dictionary Skills

Data reflecting the normal subjects' trends in achievement in dictionary skills are presented in Table 21 and Figure 11. Specific relationships are described below.

Identifying Alphabetical Sequences Based on First Letter. -- The normal subjects at reading instructional level 3 attained about 70% of the total possible score while the subjects at reading instructional level 5 attained about 94% on identifying alphabetical sequences based on first letter. The trend of the means was significant. It was linear in form.

Table 21

Summary: Trends in Achievement by the Normal Group -- Dictionary Skills

Basal reading skill/ Possible score	Means by R.I.L. 2	3	4	5	Trends L	Q	C
5.1 Identifying alphabetical sequences based on first letter/12	--	8.44	9.89	11.33	S	NS	--
5.2 Identifying alphabetical sequences based on third letter/12	--	3.11	6.93	10.30	S	NS	--
5.3 Identifying alphabetical sequences based on first, second, or third letter/12	--	1.67	3.33	8.15	S	NS	--
6.3 Using dictionary guide words/30	--	6.74	9.00	17.15	S	S	--
7.1 Finding definitions of single entry words/12	--	3.04	4.15	9.89	S	S	--
7.2 Finding definitions of multiple entry words/16	--	2.85	4.00	12.67	S	S	--
8.1 Selecting definitions of single entry words/16	--	--	4.52	9.48	S	--	--
8.2 Selecting definitions of multiple entry words/12	--	--	3.63	6.78	S	--	--

Table 21 (Continued)

Basal reading skill/ Possible score	Means by R.I.L. 2	3	4	5	Trends L	Q	C
9.1 Interpreting single pronunciation symbols/16	--	4.59	7.11	8.11	S	NS	--
9.2 Interpreting multiple pronunciation symbols/8	--	0.70	2.07	1.44	NS	S	--

Identifying Alphabetical Sequences Based on Third Letter. -- At reading instructional level 3, the normal subjects attained about 26% of the possible score on identifying alphabetical sequences based on third letter; the subjects at reading instructional level 5, about 86%. The trend of the means was significant and linear.

Identifying Alphabetical Sequences Based on First, Second, or Third Letter. -- The subjects at reading instructional level 3 attained about 14% of the score possible on identifying alphabetical sequences based on first, second, or third letter, while the subjects at reading instructional level 5 attained about 68%. The trend was significant. It was generally linear in form.

Using Dictionary Guide Words. -- Of the total possible score on using dictionary guide words, the subjects at reading instructional levels 3, 4, and 5 attained about 22%, about 30%, and about 57%, respectively. A significant quadratic trend was present. The pattern was one of progressively larger increments.

Finding Definitions of Single Entry Words. -- A significant quadratic trend was present for finding definitions of single entry words. The percentages attained over the three reading instructional levels were approximately 25%, 35%, and 82%, respectively. The pattern was again one of progressively larger increments.

Finding Definitions of Multiple Entry Words. -- Again, a significant quadratic trend was present with the pattern being one of progressively larger increments. For finding definitions of multiple entry words, the percentages of the possible score which the subjects attained at the three instructional levels were approximately 18%, 25%, and 79%.

Selecting Definitions of Single Entry Words. -- The subjects at reading instructional levels 4 and 5 attained about 28% and 59%, respectively, of the total possible score on selecting definitions of single entry words. The trend was significant and, since there were only two points, the trend was linear.

Selecting Definitions of Multiple Entry Words. -- At reading instructional level 4, the normal subjects attained about 30% of the possible score on selecting definitions of multiple entry words, while the subjects at reading instructional level 5 attained about 57%. The trend was significant and, necessarily, linear.

Interpreting Single Pronunciation Symbols. -- At reading instructional level 3, the normal subjects attained about 29% of the possible score for interpreting single pronunciation symbols while the subjects at reading instructional level 5 attained about 51%. The trend of the means was significant. It was primarily linear.

Interpreting Multiple Pronunciation Symbols. -- A significant quadratic trend described the means of interpreting multiple pronunciation symbols. The percentages of the possible score attained at the three reading instructional levels were approximately 9%, 26%, and 18%, respectively. The pattern was increment and then decrement.

Word Functions Skills

Table 22 and Figure 12 portray the results of the trend analyses of the normal subjects' achievement for the word functions skills. Specific relationships are described below.

Recognizing Functions of Nouns. -- A significant quadratic trend was present in the means for recognizing functions of nouns. At reading instructional levels 2, 3, 4, and 5, the percentages attained were about 29%, 28%, 38%, and 59%, respectively. The pattern was primarily one of progressively larger increments.

Recognizing Functions of Verbs. -- The normal subjects at reading instructional level 2 attained about 18% of the possible score while the subjects at reading instructional level 5 attained about 56%. The trend of the means for recognizing functions of verbs was significantly different from zero. It was primarily linear.

Table 22

Summary: Trends in Achievement by the Normal Group -- Word Functions Skills

Basal reading skill/ Possible score	Means by R.I.L.				Trends		
	2	3	4	5	L	Q	C
14.1 Recognizing functions of nouns/12	3.52	3.30	4.56	7.11	S	S	NS
14.2 Recognizing functions of verbs/12	2.15	3.00	4.56	6.66	S	NS	NS
14.3 Recognizing functions of adjectives/12	2.26	2.44	3.22	5.67	S	S	NS
14.4 Recognizing functions of adverbs/12	2.37	2.19	2.74	4.89	S	S	NS
15.1 Specifying functions of nouns/12	2.41	2.78	3.04	4.52	S	NS	NS
15.2 Specifying functions of verbs/12	2.26	2.70	3.89	5.15	S	NS	NS
15.3 Specifying functions of adjectives/12	2.04	2.44	2.89	4.22	S	NS	NS
15.4 Specifying functions of adverbs/12	2.15	2.44	1.93	2.78	NS	NS	NS

Recognizing Functions of Adjectives. -- A significant quadratic trend was present in the means for recognizing functions of adjectives. The percentages attained by normal subjects at the four reading instructional levels were approximately 19%, 20%, 27%, and 47%, respectively. The pattern was this: no apparent increment occurred between reading instructional levels 2 and 3; then, the increments were progressively larger.

Recognizing Functions of Adverbs. -- Here again, a significant quadratic trend was present in the normal subjects' means. That is, the percentages of the possible score which the subjects attained for recognizing functions of adverbs were approximately 20%, 18%, 23%, and 41%, respectively. The pattern, then, was one of no apparent differences between reading instructional levels 2 and 3 and then successively larger increments.

Specifying Functions of Nouns. -- The normal subjects at reading instructional level 2 attained about 20% while the subjects at reading instructional level 5 attained approximately 38% of the possible score for specifying functions of nouns. The trend of the means was significant. It was generally linear.

Specifying Functions of Verbs. -- Again, a significant linear trend was present. The normal subjects at reading instructional level 2 attained approximately 19% for specifying functions of verbs. The subjects at reading instructional level 5 attained about 43%.

Specifying Functions of Adjectives. -- The normal subjects' mean at reading instructional level 2 was approximately 17% of the possible score for specifying functions of adjectives; at reading instructional level 5, about 35%. The trend was significant. It was generally linear.

Specifying Functions of Adverbs. -- At reading instructional level 2, the subjects attained about 18% of the possible score. The trend in the means for specifying functions of adverbs did not depart significantly from zero.

Comprehension Skills

Table 23 and Figure 13 contain the data for the normal subjects' trends in achievement in the comprehension skills. Specific relationships are described below.

Identifying Cause-effect Relationships Directly Stated in Sentences. -- A significant cubic trend was present in the normal subjects' means for identifying cause-effect relationships directly stated in sentences. At the four reading instructional levels the approximate percentages of the possible score which the subjects attained were 56%, 60%, 75%, and 77%, respectively. The pattern was this: smaller increment, larger increment, smaller increment.

Identifying Main Ideas Directly Stated in Paragraphs.--- The normal subjects at reading instructional level 2 attained 33% of the possible score for identifying main ideas directly stated in paragraphs. The group at reading instructional level 5 attained about 59%. The trend was significant. It was primarily linear.

Table 23

Summary: Trends in Achievement by the Normal Group -- Comprehension Skills

Basal reading skill/ Possible score	Means by R.I.L. 2	3	4	5	Trends L	Q	C
16.1 Identifying cause-effect relationships directly stated in sentences/12	6.70	7.30	9.04	9.22	S	NS	S
17.3 Identifying main ideas directly stated in paragraphs/12	3.96	5.07	6.70	7.11	S	NS	NS
17.1 Identifying main ideas directly stated in stories/12	3.33	4.67	5.70	6.81	S	NS	NS
16.2 Identifying cause-effect relationships implied in sentences/12	6.22	7.52	8.70	9.59	S	NS	NS
17.4 Identifying main ideas implied in paragraphs/12	3.59	4.41	6.15	7.89	S	NS	NS
17.2 Identifying main ideas implied in stories/12	4.59	5.18	6.37	7.44	S	NS	NS
17.5 Identifying details in stories/24	6.19	7.41	12.00	15.52	S	NS	NS
19.1 Interpreting similes/8	6.67	6.48	6.89	6.67	NS	NS	NS

Table 23 (Continued)

Basal reading skill/ Possible score	Means by R.I.L. 2	3	4	5	Trends L	Q	C
19.2 Interpreting idioms/8	5.00	5.26	6.67	5.70	S	NS	S
19.3 Interpreting hyperboles/8	5.82	5.70	6.59	5.89	NS	NS	NS
19.4 Interpreting personification/8	6.33	6.26	7.41	6.82	S	NS	S
19.5 Interpreting metaphors/8	4.52	4.89	5.48	6.11	S	NS	NS
20.1 Predicting outcomes and actions[a]/14	6.63	6.78	7.30	8.59	S	NS	NS
20.2 Discriminating between fact and fiction[b]/14	7.19	8.19	9.00	9.81	S	NS	NS
20.3 Discriminating between fact and opinion[c]/14	6.52	6.15	6.85	6.96	NS	NS	NS

[a,b,c]The information presented here about trends in these three critical reading skills was based on data obtained by Myers (1967) in her study conducted in conjunction with the present project.

Identifying Main Ideas Directly Stated in Stories. -- Again, a significant linear trend was present in the means. The normal subjects at reading instructional level 2 attained about 28% of the score possible for identifying main ideas directly stated in stories while the subjects at reading instructional level 5 attained about 57%.

Identifying Cause-effect Relationships Implied in Sentences. -- At reading instructional level 2, the normal subjects attained about 52% of the possible score for identifying cause-effect relationships implied in sentences. The subjects at reading instructional level 5 attained about 80%. The trend of the means departed significantly from zero. It was linear in form.

Identifying Main Ideas Implied in Paragraphs. -- The normal subjects at reading instructional levels 2 and 5, respectively, attained about 30% and 66% of the score possible for identifying main ideas implied in paragraphs. A significant linear trend was present in the means.

Identifying Main Ideas Implied in Stories. -- Again, a significant linear trend was present. At reading instructional level 2, the normal subjects attained about 38% of the score possible for identifying main ideas implied in stories. The subjects at reading instructional level 5 attained approximately 62%.

Identifying Details in Stories. -- The normal subjects at reading instructional level 2 attained 26% while the normal subjects at reading instructional level 5 attained 65% of the score possible for identifying details in stories. The trend was significant and linear in form.

Interpreting Similes. -- The normal subjects at reading instructional level 2 attained 83% of the possible score for interpreting similes. No significant differences occurred at subsequent reading instructional levels; that is, the trend of the means did not depart significantly from zero.

Interpreting Idioms. -- A significant cubic trend was present in the means for interpreting idioms. The percentages attained at the four respective reading instructional levels were about 63%, 66%, 83%, and 71%. The pattern of increments was the following: small increment, large increment, decrement.

Interpreting Hyperboles. -- At reading instructional level 2, the normal subjects attained about 73% of the possible score for interpreting hyperboles. At subsequent reading instructional levels, significant changes in the means did not occur. That is, the trend of the means did not depart significantly from zero.

Interpreting Personification. -- A significant cubic trend characterized the means for interpreting personification. At the four reading instructional levels, the approximate percentages attained were 79%, 78%, 93%, and 85%, respectively. Thus, the pattern of differences was no change, increment, decrement.

Interpreting Metaphors. -- At reading instructional level 2, the normal subjects attained about 57% of the score possible for interpreting metaphors; at reading instructional level 5, about 76%. The trend of the means over reading instructional levels differed significantly from zero. It was linear.

Data supplied by Myers (1967) pertained to the trends of normal subjects' means on the critical reading skills. Table 23 and Figure 13 include relevant data. These data are described below.

Predicting Outcomes and Actions. -- The trend of the normal subjects' means for predicting outcomes and actions was significant. It was linear in form. The approximate percentages of the total possible score were 47% and 61% for reading instructional levels 2 and 5, respectively.

Discriminating Between Fact and Fiction. -- The normal subjects at reading instructional level 2 attained about 51% of the possible score for discriminating between fact and fiction. Subjects at reading instructional level 5 attained about 70%. The trend of the means was significantly linear.

Discriminating Between Fact and Opinion. -- The normal subjects at reading instructional level 2 attained about 47% of the score possible for discriminating between fact and opinion. The trend of the means was not significant.

Superior Group

Identifying Words at Sight

In Table 24 and Figure 14 are data reflecting the trend of the superior subjects' means on identifying words at sight. The subjects attained approximately 22%, 52%, 64%, and 77% of the possible score at reading instructional levels 2, 3, 4, and 5, respectively. The trend of the means was significant. It was quadratic in form. The pattern was this: large increment between reading instructional levels 2 and 3 and about equal increments subsequently.

Table 24

Summary: Trends in Achievement by the Superior Group -- Identifying Words at Sight

Basal reading skill/ Possible score	Means by R.I.L.				Trends		
	2	3	4	5	L	Q	C
18.1 Identifying words at sight/48	10.61	25.04	30.57	36.74	S	S	NS

Phonetic Analysis Skills

Table 25 contains a summary of the analyses of the trends of the superior subjects' means for the phonetic analysis skills. Figure 15 is composed of graphs portraying average performance at the several reading instructional levels. Specific relationships are described below.

Associating Vowel Letters and Sounds. -- The superior subjects at reading instructional level 2 attained about 74% and the subjects at reading instructional level 5 attained about 84% of the total possible score for associating vowel letters and sounds. The trend of the means differed significantly from zero. The trend was very generally linear.

Associating Consonant Letters and Sounds. -- A significant cubic trend was present among the superior subjects' means for associating consonant letters and sounds. The percentages of the total possible score attained at reading instructional levels 2, 3, 4, and 5 were approximately 91%, 95%, 84%, and 91%, respectively. The pattern was increment, decrement, increment.

Associating Consonant Digraphs and Sounds. -- For the skill, associating consonant digraphs and sounds, a significant cubic trend was also present. At the respective reading instructional levels from 2 through 5, the percentages of the total possible score which the superior subjects attained were approximately 63%, 75%, 66%, and 78%. The pattern of the means, then, was increment, decrement, increment.

Table 25

Summary: Trends in Achievement by the Superior Group -- Phonetic Analysis Skills

Basal reading skill/ Possible score	Means by R.I.L. 2	3	4	5	Trends L	Q	C
10.1 Associating vowel letters and sounds/10	7.39	7.39	7.43	8.39	S	NS	NS
10.2 Associating consonant letters and sounds/20	18.22	19.04	16.78	18.22	NS	NS	S
10.3 Associating consonant digraphs and sounds/6	3.78	4.52	3.91	4.65	S	NS	S
10.8 Associating consonant blends and sounds/22	15.04	16.70	13.96	16.33	NS	NS	S
11.3 Using spelling patterns/34	13.65	21.48	21.26	25.04	S	NS	S
13.1 Identifying syllables in orally and visually presented short words/16	--	14.96	14.96	15.83	S	NS	--
12.1 Identifying syllables in visually presented short words/16	--	11.83	13.48	15.04	S	NS	--
13.2 Identifying syllables in orally and visually presented long words/16	--	12.00	10.17	13.52	NS	S	--
12.2 Identifying syllables in visually presented long words/16	--	5.22	7.57	11.39	S	NS	--

Associating Consonant Blends and Sounds. -- Again, for associating consonant blends and sounds, a significant cubic trend was present in the superior subjects' means. The four respective percentages attained were approximately 68%, 76%, 63%, and 74%. The pattern was increment, decrement, increment.

Using Spelling Patterns. -- For the skill, using spelling patterns, a significant cubic trend was again present. The superior subjects' means at reading instructional levels 2, 3, 4, and 5 were approximately 40%, 63%, 63%, and 74%, respectively. Thus, increments occurred between reading instructional levels 2 and 3 and between reading instructional levels 4 and 5; apparently, no change occurred between reading instructional levels 3 and 4.

Identifying Syllables in Orally and Visually Presented Short Words. -- At reading instructional level 3, the superior subjects attained about 94% of the total score possible for identifying syllables in orally and visually presented short words; at reading instructional level 5, the group attained about 99%. A significant trend was present. It was generally linear.

Identifying Syllables in Visually Presented Short Words. -- The superior subjects at reading instructional level 3 attained about 74% while the subjects at reading instructional level 5 attained about 94% of the total possible score for identifying syllables in visually presented short words. The trend of the means was significant. It was linear.

Identifying Syllables in Orally and Visually Presented Long Words. -- A significant quadratic trend characterized the superior subjects' means for identifying syllables in orally and visually presented long words. The percentages of the total possible score attained at reading instructional levels 3, 4, and 5 were approximately 75%, 64%, and 85%, respectively. The pattern, then, among the means was a decrement followed by an increment.

Identifying Syllables in Visually Presented Long Words. -- The superior subjects at reading instructional level 3 attained approximately 33% of the possible score for identifying syllables in visually presented long words. The subjects at reading instructional level 5 attained about 71%. The trend of the means was significant. This trend was primarily linear.

Structural Analysis Skills

Information about the trends among the superior subjects' means for the structural analysis skills is summarized in Table 26 and portrayed graphically in Figure 16. More detailed information about these trends is presented below.

Table 26

Summary: Trends in Achievement by the Superior Group -- Structural Analysis Skills

Basal reading skill/ Possible score	Means by R.I.L. 2	3	4	5	Trends L	Q	C
3.1 Identifying components of compounds/24	14.35	19.91	22.13	23.74	S	S	NS
4.1 Identifying roots, endings, and suffixes/12	5.22	7.96	8.87	10.43	S	NS	NS
4.2 Identifying roots and prefixes/10	0.69	5.13	6.96	8.87	S	S	NS
4.4 Identifying roots and multiple affixes/8	1.65	4.91	5.39	5.30	S	S	NS
2.1 Translating contractions/12	6.61	9.22	10.09	10.78	S	S	NS
4.3 Locating roots by using root-change rules/14	1.87	8.04	9.30	12.57	S	S	S
1.1 Changing roots by using root-change rules/14	0.35	5.52	5.35	9.52	S	NS	S

Identifying Components of Compounds. -- A significant quadratic trend was present in the superior subjects' means for identifying components of compounds. The percentages of the possible score attained at reading instructional levels 2, 3, 4, and 5 were approximately 60%, 83%, 92%, and 99%, respectively. The pattern was one of increments which decreased in magnitude over the four reading instructional levels as the subjects approached the task ceiling.

Identifying Roots, Endings, and Suffixes. -- The superior subjects at reading instructional level 2 attained about 44% of the possible score while the subjects at reading instructional level 5 attained approximately 87%. The trend of the means for identifying roots, endings, and suffixes was significantly different from zero. It was primarily linear in form.

Identifying Roots and Prefixes. -- A significant trend was present in the means for identifying roots and prefixes. It was quadratic in form. The percentages attained by the superior subjects at the four reading instructional levels were approximately 7%, 51%, 70%, and 89%. The pattern, then, was one of increments which decreased in size over the reading instructional levels 2, 3, 4, and 5.

Identifying Roots and Multiple Affixes. -- A significant quadratic trend was present in the superior subjects' means for identifying roots and multiple affixes. The approximate percentages attained at the four reading instructional levels were about 21%, 61%, 67%, and 66%, respectively. The pattern among the means was large increment, small increment, and no apparent change.

Translating Contractions. -- A significant quadratic trend was present in the superior subjects' means for translating contractions. The approximate percentages of attainment at the four reading instructional levels were about 55%, 77%, 84%, and 89%, respectively. The pattern again was one of increments between reading instructional levels which decreased in size.

Locating Roots by Using Root-change Rules. -- A significant cubic trend was present in the superior subjects' means for locating roots by using root-change rules. The approximate percentages attained were about 13%, 57%, 66%, and 90%, respectively. The pattern of increments was large increment, small increment, large increment.

Changing Roots by Using Root-change Rules. -- For changing roots by using root-change rules, a significant trend was present; it was cubic. The approximate percentages attained by the superior subjects at reading instructional levels 2, 3, 4, and 5 were approximately 3%, 39%, 38%, and 68%, respectively. The pattern was large increment, no apparent change, small increment.

Dictionary Skills

Table 27 and Figure 17 contain data reflecting trends in the superior subjects' achievement in the dictionary skills. Specific relationships are described below.

Table 27

Summary: Trends in Achievement by the Superior Group -- Dictionary Skills

Basal reading skill/ Possible score	Means by R.I.L.				Trends		
	2	3	4	5	L	Q	C
5.1 Identifying alphabetical sequences based on first letter/12	--	10.87	11.22	12.00	S	NS	--
5.2 Identifying alphabetical sequences based on third letter/12	--	6.70	10.17	11.17	S	NS	--
5.3 Identifying alphabetical sequences based on first, second, or third letter/12	--	2.78	8.22	9.35	S	S	--
6.3 Using dictionary guide words/30	--	8.91	12.30	20.22	S	NS	--
7.1 Finding definitions of single entry words/12	--	6.26	5.52	11.30	S	S	--
7.2 Finding definitions of multiple entry words/16	--	6.48	7.65	13.52	S	NS	--
8.1 Selecting definitions of single entry words/16	--	--	8.30	12.96	S	--	--
8.2 Selecting definitions of multiple entry words/12	--	--	5.61	9.52	S	--	--

Table 27 (Continued)

Basal reading skill/ Possible score	Means by R.I.L. 2	3	4	5	Trends L	Q	C
9.1 Interpreting single pronunciation symbols/16	--	6.35	8.65	11.78	S	NS	--
9.2 Interpreting multiple pronunciation symbols/8	--	0.43	1.43	2.04	S	NS	--

Identifying Alphabetical Sequences Based on First Letter. -- The superior subjects at reading instructional level 3 attained about 91% of the score while at reading instructional level 5 they attained 100% of the possible score for identifying alphabetical sequences based on first letter. A significant linear trend was present in the means.

Identifying Alphabetical Sequences Based on Third Letter. -- The superior subjects at reading instructional level 3 attained about 56% of the possible score for identifying alphabetical sequences based on third letter while the group at reading instructional level 5 attained about 93%. The trend was significant. It was linear in form.

Identifying Alphabetical Sequences Based on First, Second, and Third Letter. -- A significant quadratic trend was present in the means for identifying alphabetical sequences based on first, second, and third letter. Respectively, the percentages of the possible score which the subjects attained at reading instructional levels 3, 4, and 5 were approximately 23%, 69%, and 78%. Thus, the pattern was large increment and then small increment.

Using Dictionary Guide Words. -- The superior subjects at reading instructional level 3 attained about 30% of the possible score while the subjects at reading instructional level 5 attained about 67%. A significant linear trend was present.

Finding Definitions of Single Entry Words. -- A significant quadratic trend was present in the means for finding definitions of single entry words. The percentages of the possible score attained by superior subjects at reading instructional levels 3, 4, and 5 were approximately 52%, 46%, 94%, respectively. The pattern was a decrement followed by an increment.

Finding Definitions of Multiple Entry Words. -- The superior subjects at reading instructional level 3 attained about 41% while those at reading instructional level 5 attained about 85% of the possible score for finding definitions of multiple entry words. The trend of the means was significant. It was primarily linear in form.

Selecting Definitions of Single Entry Words. -- The superior subjects at reading instructional level 4 attained about 52% while those at reading instructional level 5 attained approximately 81% of the score possible for selecting definitions of single entry words. The trend was significant. The shape, necessarily, was linear.

Selecting Definitions of Multiple Entry Words. -- Again, a significant trend was present. Since only two points were involved for selecting definitions of multiple entry words, the trend was linear. The means were about 47% and 79% of the possible score at reading instructional levels 4 and 5, respectively.

Interpreting Single Pronunciation Symbols. -- The superior subjects at reading instructional level 3 attained about 40% while those at reading instructional level 5 attained about 74% for interpreting single pronunciation symbols. The trend of the means was significant. It was linear in form.

Interpreting Multiple Pronunciation Symbols. -- The subjects attained about 5% and about 26% of the total possible score at reading instructional levels 3 and 5, respectively. The trend for interpreting multiple pronunciation symbols was significant. It was linear in shape.

Word Functions Skills

Data reflecting the superior subjects' trends in achievement for the word functions skills are in Table 28 and Figure 18. Specific relationships are described below.

Recognizing Functions of Nouns. -- Superior subjects at reading instructional level 2 attained about 30% while those at reading instructional level 5 attained about 69% of the possible score for recognizing functions of nouns. The trend was significant. It was linear.

Recognizing Functions of Verbs. -- A significant linear trend also was present for recognizing functions of verbs. At reading instructional level 2, the superior subjects attained about 24% of the possible score while at reading instructional level 5 the subjects attained about 75%.

Table 28

Summary: Trends in Achievement by the Superior Group -- Word Functions Skills

Basal reading skill/ Possible score	Means by R.I.L. 2	3	4	5	Trends L	Q	C
14.1 Recognizing functions of nouns/12	3.61	5.17	6.87	8.26	S	NS	NS
14.2 Recognizing functions of verbs/12	2.87	4.52	6.91	9.00	S	NS	NS
14.3 Recognizing functions of adjectives/12	2.74	3.61	5.26	8.39	S	S	NS
14.4 Recognizing functions of adverbs/12	2.00	3.96	5.09	6.52	S	NS	NS
15.1 Specifying functions of nouns/12	2.13	3.78	5.09	6.35	S	NS	NS
15.2 Specifying functions of verbs/12	1.83	4.00	5.78	7.13	S	NS	NS
15.3 Specifying functions of adjectives/12	2.04	2.61	4.57	6.74	S	NS	NS
15.4 Specifying functions of adverbs/12	1.13	1.91	3.13	3.87	S	NS	NS

Recognizing Functions of Adjectives. -- A significant quadratic trend was present in the means for recognizing functions of adjectives. The percentages attained at reading instructional levels 2, 3, 4, and 5 were approximately 23%, 30%, 44%, and 70%, respectively. The pattern was one of progressively larger increments.

Recognizing Functions of Adverbs. -- At reading instructional levels 2 and 5 the subjects attained approximately 17% and 54%, respectively, of the possible score for recognizing functions of adverbs. The trend was significant. It was linear in shape.

Specifying Functions of Nouns. -- Subjects at reading instructional level 2 attained about 18% of the possible score for specifying functions of nouns while those at reading instructional level 5 attained about 53%. The trend was significant. It was linear.

Specifying Functions of Verbs. -- For specifying functions of verbs, the superior subjects at reading instructional level 2 attained about 15% while those at reading instructional level 5 attained about 59% of the possible score. A significant linear trend was present in the means.

Specifying Functions of Adjectives. -- A significant linear trend was again present in the means. The superior subjects at reading instructional level 2 attained about 17% while those at reading instructional level 5 attained about 56% for specifying functions of adjectives.

Specifying Functions of Adverbs. -- Superior subjects at reading instructional level 2 attained about 9% of the possible score for specifying functions of adverbs. Those at reading instructional level 5 attained about 32%. The trend of the means was significant. It was linear in form.

Comprehension Skills

Presented in Table 29 and Figure 19 are data relevant to trends in the superior subjects' achievement in the comprehension skills. Specific relationships are described below.

Identifying Cause-effect Relationships Directly Stated in Sentences. -- A significant quadratic trend was present in the means for identifying cause-effect relationships directly stated in sentences. The percentages attained at reading instructional levels 2, 3, 4, and 5 were approximately 53%, 75%, 80%, and 83%, respectively. The pattern was one of progressively smaller increments.

Identifying Main Ideas Directly Stated in Paragraphs. -- The superior subjects at reading instructional level 2 attained about 39% of the possible score for identifying main ideas directly stated in paragraphs; the subjects at reading instructional level 5 attained about 75%. The trend of the means departed significantly from zero. The trend was linear in form.

Table 29

Summary: Trends in Achievement by the Superior Group -- Comprehension Skills

Basal reading skill/ Possible score	Means by R.I.L. 2	3	4	5	Trends L	Q	C
16.1 Identifying cause-effect relationships directly stated in sentences/12	6.35	8.96	9.57	10.00	S	S	NS
17.3 Identifying main ideas directly stated in paragraphs/12	4.65	6.56	8.00	8.95	S	NS	NS
17.1 Identifying main ideas directly stated in stories/12	3.78	6.61	7.87	8.35	S	S	NS
16.2 Identifying cause-effect relationships implied in sentences/12	6.22	9.52	9.52	10.43	S	S	S
17.4 Identifying main ideas implied in paragraphs/12	3.78	6.96	8.26	9.48	S	NS	NS
17.2 Identifying main ideas implied in stories/12	5.22	7.26	7.96	8.78	S	NS	NS
17.5 Identifying details in stories/24	7.43	11.35	16.56	18.69	S	NS	NS
19.1 Interpreting similes/8	6.48	7.13	7.09	7.09	S	NS	NS

Table 29 (Continued)

Basal reading skill/ Possible score	Means by R.I.L.				Trends		
	2	3	4	5	L	Q	C
19.2 Interpreting idioms/8	5.35	7.30	7.87	7.83	S	S	NS
19.3 Interpreting hyperboles/8	5.43	7.65	7.35	7.13	S	S	S
19.4 Interpreting personification/8	5.65	7.65	7.91	7.70	S	S	NS
19.5 Interpreting metaphors/8	4.91	6.87	6.57	7.30	S	S	S
20.1 Predicting outcomes and actions[a]/14	7.26	9.00	8.43	10.17	S	NS	S
20.2 Discriminating between fact and fiction[b]/14	8.65	10.61	10.61	11.09	S	NS	NS
20.3 Discriminating between fact and opinion[c]/14	6.65	8.91	8.52	9.65	S	NS	S

[a,b,c]The information presented here about trends in these three critical reading skills was based on data obtained by Myers (1967) in her study conducted in conjunction with the present project.

Identifying Main Ideas Directly Stated in Stories. -- The trend of the means for identifying main ideas directly stated in stories was significant. It was quadratic. The superior subjects at the four reading instructional levels respectively attained the following approximate percentages of the possible score: 32%, 55%, 65%, and 70%. The pattern, then, was one of progressively smaller increments.

Identifying Cause-effect Relationships Implied in Sentences. -- A significant cubic trend was present in the means for identifying cause-effect relationships implied in sentences. The superior subjects at the reading instructional levels 2, 3, 4, and 5 attained the following percentages of the possible score: 52%, 79%, 79%, and 87%. The pattern was large increment, no apparent change, and then small increment.

Identifying Main Ideas Implied in Paragraphs. -- Superior subjects at reading instructional level 2 attained about 32% of the possible score for identifying main ideas implied in paragraphs; subjects at reading instructional level 5, about 79%. The trend of the means was significant. It was linear in form.

Identifying Main Ideas Implied in Stories. -- A significant linear trend was present in the superior subjects' means for identifying main ideas implied in stories. The subjects at reading instructional level 2 attained about 44% while those at reading instructional level 5 attained about 73% of the possible score.

Identifying Details in Stories. -- Superior subjects at reading instructional level 2 attained about 31% of the possible score for identifying details in stories while those at reading instructional level 5 attained about 78%. The trend was significant. It was linear in form.

Interpreting Similes. -- Subjects at reading instructional level 2 attained about 81% of the possible score for interpreting similes. Superior subjects at reading instructional level 5 attained about 89%. A significant trend was present. The trend was generally linear in form.

Interpreting Idioms. -- A significant quadratic trend was present among the means for interpreting idioms. At the respective reading instructional levels, the approximate percentages of the possible score which the superior subjects attained were 67%, 91%, 98%, and 98%. And so, the pattern was one of progressively smaller increments to reading instructional level 4. Between reading instructional levels 4 and 5 no apparent change occurred; such a change was hardly possible since the subjects had attained about 98% of the possible score.

Interpreting Hyperboles. -- A significant cubic trend was present in the means for interpreting hyperboles. The approximate percentages attained by the subjects at the four reading instructional levels were 68%, 96%, 92%, and 89%, respectively. The pattern was increment and then progressively smaller decrements.

Interpreting Personification. -- The trend of the means for interpreting personification was significant. It was quadratic in form. The percentages of the possible score which the subjects attained were about 71%, 96%, 99%, and 96% at instructional levels 2, 3, 4, and 5, respectively. The pattern then was a large increment and then a small increment to a practically perfect score.

Interpreting Metaphors. -- For interpreting metaphors, the trend of the means was significant. It was cubic in shape. At reading instructional levels 2, 3, 4, and 5, respectively, the superior subjects attained approximately 61%, 86%, 82%, and 91% of the possible score. The pattern, then, was large increment, no change or small decrement, and then small increment.

Data supplied by Myers (1967) were used in analyzing trends in the superior subjects' means on the critical reading skills. These data are summarized and portrayed in Table 29 and Figure 19. Details are presented below.

Predicting Outcomes and Actions. -- For predicting outcomes and actions, the trend of the superior subjects' means was significantly cubic. The approximate percentages of the total possible score attained at the four instructional levels were 52%, 64%, 60%, and 73%, respectively. The pattern, then, was increment, no change or a slight decrement, increment.

Discriminating Between Fact and Fiction. -- At reading instructional level 2, the superior subjects attained about 62% of the possible score; subjects at reading instructional level 5 attained approximately 79%. The trend of the means was significant and linear in shape.

Discriminating Between Fact and Opinion. -- A significant cubic trend was present in the superior subjects' means for discriminating between fact and opinion. The approximate percentages of the possible score attained by subjects at the four reading instructional levels were 48%, 64%, 61%, and 69%, respectively. And so, the pattern was large increment, no change or slight decrement, small increment.

Summary of Results

Retarded Group

Identifying Words at Sight

A significant linear trend was present in the retarded subjects' means for identifying words at sight.

Phonetic Analysis Skills.

For the retarded group, significant trends were present in the means for two phonetic analysis skills: using spelling patterns, and

identifying syllables in visually presented short words. For these two skills, the trends of the means over the four reading instructional levels were generally linear. No trends were present for the remaining phonetic analysis skills: associating vowel letters and sounds, associating consonant letters and sounds, associating consonant digraphs and sounds, associating consonant blends and sounds, identifying syllables in orally and visually presented short words, identifying syllables in orally and visually presented long words, and identifying syllables in visually presented long words.

Structural Analysis Skills

Significant linear trends were present in the retarded subjects' means for all structural analysis skills: identifying components of compounds; identifying roots, endings, and suffixes; identifying roots and prefixes; identifying roots and multiple affixes; translating contractions; locating roots by using root-change rules; and changing roots by using root-change rules.

Dictionary Skills

No trends were present in the retarded subjects' means for selecting definitions of single entry words, selecting definitions of multiple entry words, interpreting single pronunciation symbols, and interpreting multiple pronunciation symbols. Significant linear trends were evident for the following: identifying alphabetical sequences based on first letter; identifying alphabetical sequences based on third letter; identifying alphabetical sequences based on first, second, or third letter; using dictionary guide words; finding definitions of single entry words; and finding definitions of multiple entry words.

Word Functions Skills

The trends of the retarded subjects' means over reading instructional levels were significant for all skills except one, specifying functions of adverbs. Significant linear trends were present for

recognizing functions of nouns, recognizing functions of adjectives, recognizing functions of adverbs, specifying functions of nouns, specifying functions of verbs, and specifying functions of adjectives. A significant cubic trend was present for recognizing functions of verbs.

Comprehension Skills

The trends of the retarded subjects' means were significant for all comprehension skills except one, interpreting hyperboles. Cubic trends were present for identifying cause-effect relationships directly stated in sentences, predicting outcomes and actions, and discriminating between fact and fiction. Linear trends were apparent for identifying main ideas directly stated in paragraphs, identifying main ideas directly stated in stories, identifying cause-effect relationships implied in sentences, identifying main ideas implied in paragraphs, identifying main ideas implied in stories, identifying details in stories, interpreting similes, interpreting idioms, interpreting personification, interpreting metaphors, and discriminating between fact and opinion.

Normal Group

Identifying Words at Sight

A significant linear trend was present for the normal subjects' means for identifying words at sight.

Phonetic Analysis Skills

Significant linear trends were present in the normal subjects' means for associating consonant blends and sounds, using spelling patterns, identifying syllables in orally and visually presented short words, identifying syllables in visually presented short words, and identifying syllables in visually presented long words. The trend was generally cubic for associating consonant digraphs and sounds. The trend was quadratic for identifying syllables in orally and visually

presented long words. The trends were not significant for two phonetic analysis skills: associating vowel letters and sounds and associating consonant letters and sounds.

Structural Analysis Skills

Significant trends were present in the normal subjects' means for all of the structural analysis skills. These trends were linear for identifying components of compounds, identifying roots and prefixes, identifying roots and multiple affixes, locating roots by using root-change rules, and changing roots by using root-change rules. A cubic trend was present in the means for identifying roots, endings, and suffixes. A quadratic trend was present in the means for translating contractions.

Dictionary Skills

The trends in the normal subjects' means for all 10 dictionary skills differed significantly from zero. Linear trends were present for six skills: identifying alphabetical sequences based on first letter; identifying alphabetical sequences based on third letter; identifying alphabetical sequences based on first, second, or third letter; selecting definitions of single entry words; selecting definitions of multiple entry words; and interpreting single pronunciation symbols. Quadratic trends were present for four skills: using dictionary guide words; finding definitions of single entry words, finding definitions of multiple entry words, and interpreting multiple pronunciation symbols.

Word Functions Skills

Significant trends were present in the normal subjects' means for all word functions skills except one, specifying functions of adverbs. The trends were linear for recognizing functions of verbs, specifying functions of nouns, specifying functions of verbs, and specifying functions of adjectives. The trends were quadratic for recognizing

functions of nouns, recognizing functions of adjectives, and recognizing functions of adverbs.

Comprehension Skills

Significant trends were present in the normal subjects' means for 12 of the 15 comprehension skills; the three exceptions were interpreting similes, interpreting hyperboles, and discriminating between fact and opinion. Linear trends were present in the normal subjects' means for identifying main ideas directly stated in paragraphs, identifying main ideas directly stated in stories, identifying cause-effect relationships implied in sentences, identifying main ideas implied in paragraphs, identifying main ideas implied in stories, identifying details in stories, interpreting metaphors, predicting outcomes and actions, and discriminating between fact and fiction. Significant cubic trends were present in the means for identifying cause-effect relationships directly stated in sentences, interpreting idioms, and interpreting personification.

Superior Group

Identifying Words at Sight

A quadratic trend was present in superior subjects' means for identifying words at sight.

Phonetic Analysis Skills

For all nine phonetic analysis skills, the trends in the superior subjects' means were significant. The trends were linear for associating vowel letters and sounds, identifying syllables in orally and visually presented short words, identifying syllables in visually presented short words, and identifying syllables in visually presented long words. The trend was quadratic for identifying syllables in

orally and visually presented long words. The trends were cubic for associating consonant letters and sounds, associating consonant digraphs and sounds, associating consonant blends and sounds, and using spelling patterns.

Structural Analysis Skills

For all seven structural analysis skills, the trends of the superior subjects' means over the four reading instructional levels were significant. The trend was linear for identifying roots, endings, and suffixes. The trends were quadratic for four skills: identifying components of compounds, identifying roots and prefixes, identifying roots and multiple affixes, and translating contractions. The trend was cubic for two skills: locating roots by using root-change rules and changing roots by using root-change rules.

Dictionary Skills

Significant linear trends were present in the superior subjects' means for each of the 10 dictionary skills. The trends were quadratic for identifying alphabetical sequences based on first, second, or third letter and for finding definitions of single entry words. The trends were linear in form for identifying alphabetical sequences based on first letter, identifying alphabetical sequences based on third letter, using dictionary guide words, finding definitions of multiple entry words, selecting definitions of single entry words, selecting definitions of multiple entry words, interpreting single pronunciation symbols, and interpreting multiple pronunciation symbols.

Word Functions Skills

Generally, the trends of the superior subjects' means for all word functions skills were significant. A quadratic trend was present in the means for recognizing functions of adjectives. Linear trends were present for recognizing functions of nouns, recognizing functions of verbs, recognizing functions of adverbs, specifying functions of

nouns, specifying functions of verbs, specifying functions of adjectives, and specifying functions of adverbs.

Comprehension Skills

Significant trends were present in the superior subjects' means for all comprehension skills. The trends were linear for identifying main ideas directly stated in paragraphs, identifying main ideas implied in paragraphs, identifying main ideas implied in stories, identifying details in stories, interpreting similes, and discriminating between fact and fiction. The trends were quadratic for identifying cause-effect relationships directly stated in sentences, identifying main ideas directly stated in stories, interpreting idioms, and interpreting personification. The trends were cubic for identifying cause-effect relationships implied in sentences, interpreting hyperboles, interpreting metaphors, predicting outcomes and actions, and discriminating between fact and opinion.

Figures 2 through 7 -- Trends in Achievement of the Retarded Group

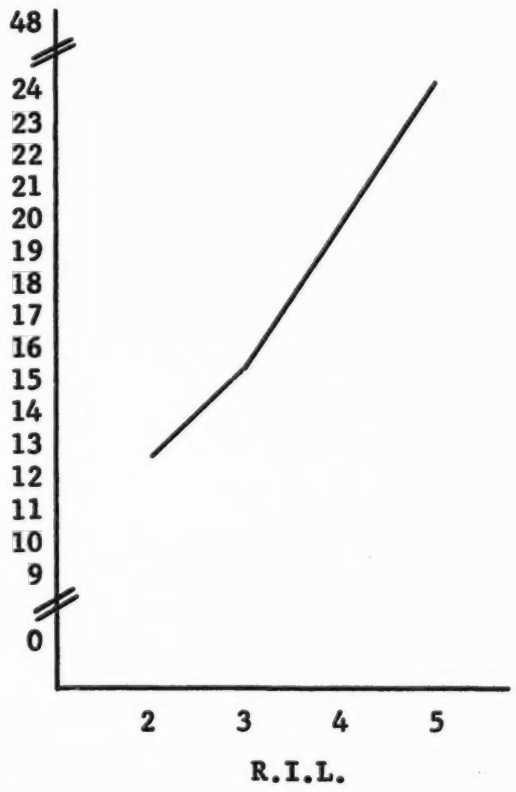
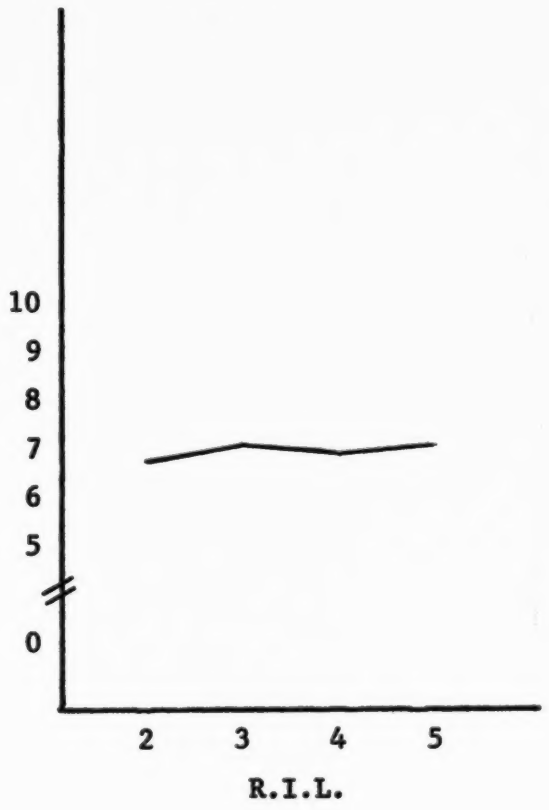
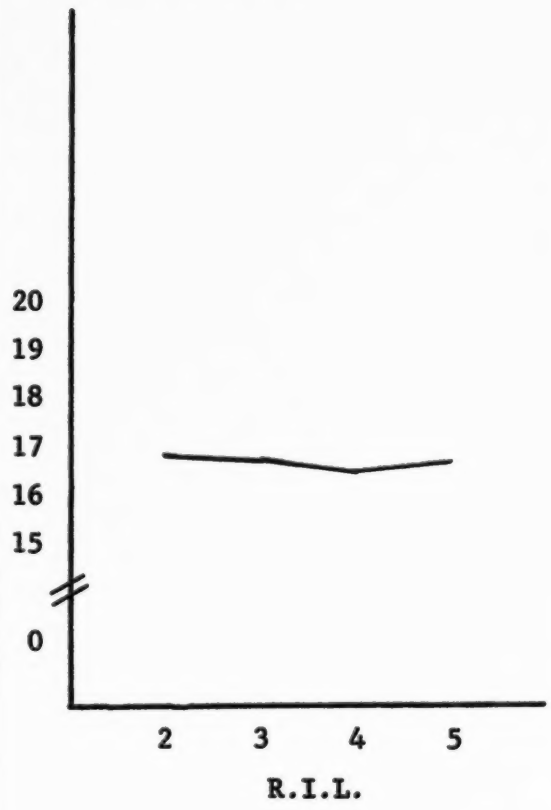


Figure 2 -- Trends in Achievement of the Retarded Group: Identifying Words at Sight

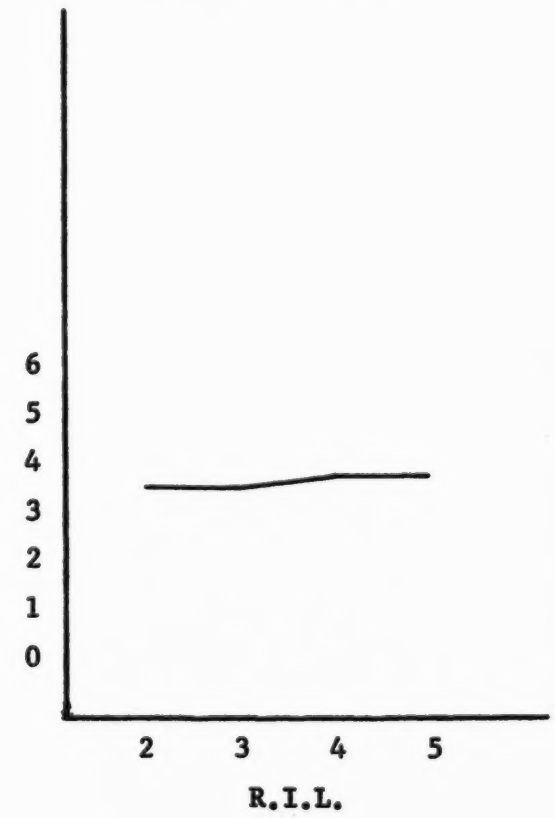
10.1 Associating vowel letters and sounds



10.2 Associating consonant letters and sounds



10.3 Associating consonant digraphs and sounds



10.8 Associating consonant blends and sounds

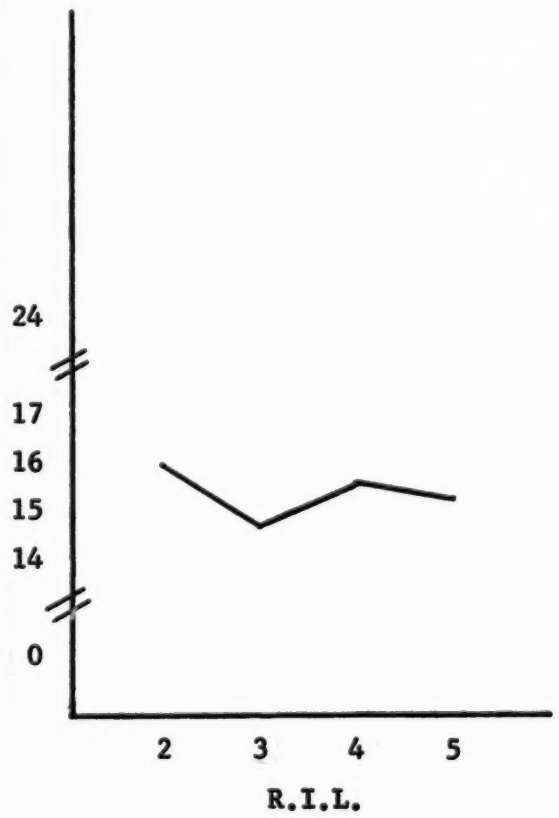
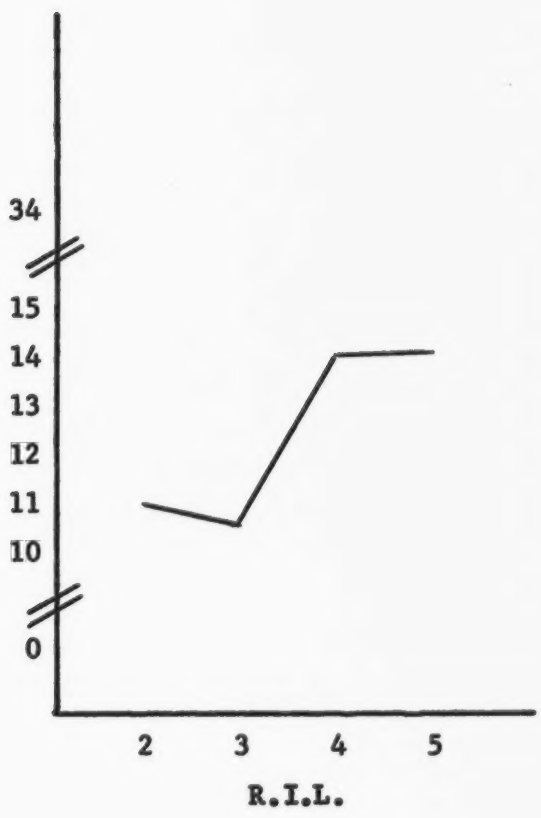
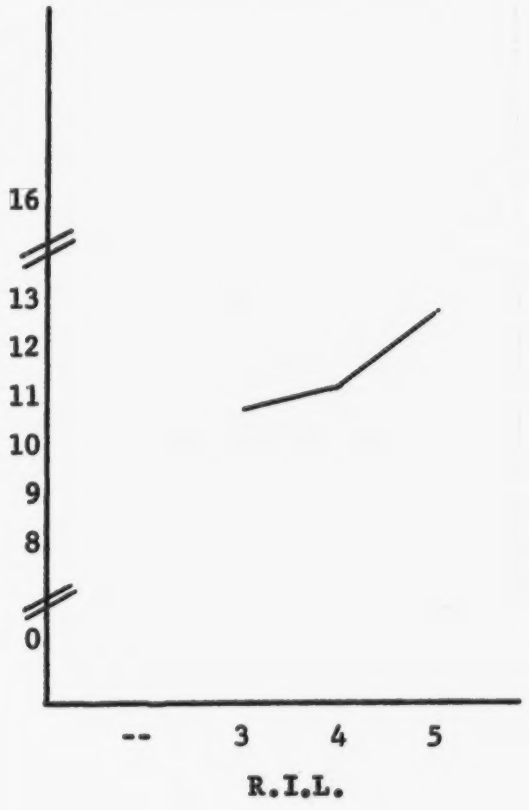


Figure 3 -- Trends in Achievement of the Retarded Group: Phonetic Analysis Skills

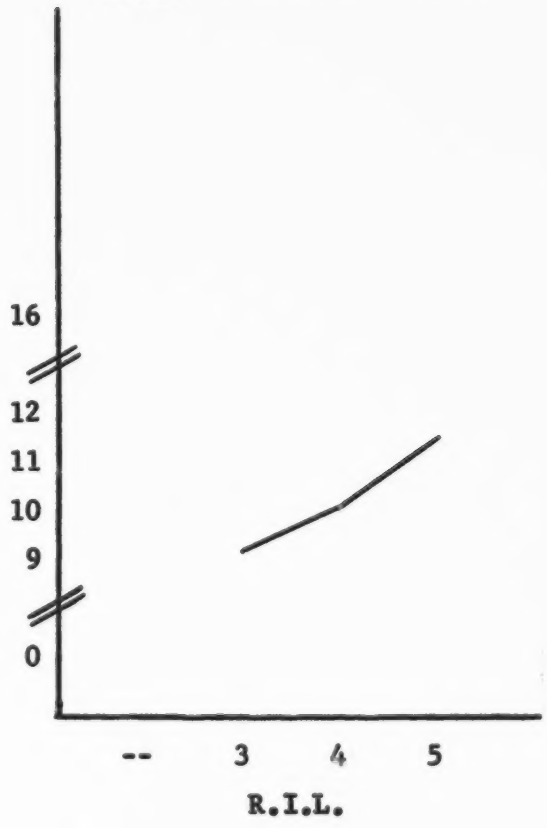
11.3 Using spelling patterns



13.1 Identifying syllables in orally and visually presented short words



12.1 Identifying syllables in visually presented short words



13.2 Identifying syllables in orally and visually presented long words

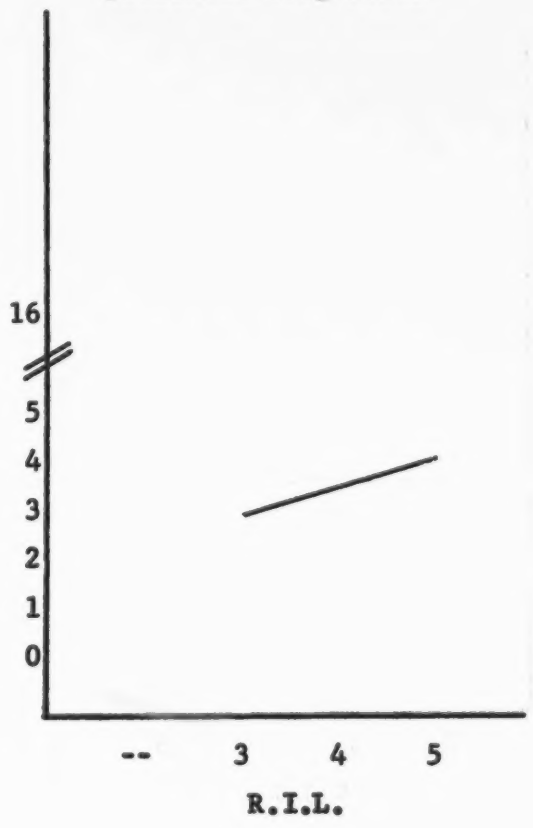


Figure 3 -- Trends in Achievement of the Retarded Group: Phonetic Analysis Skills (Continued)

12.2 Identifying syllables in visually presented long words

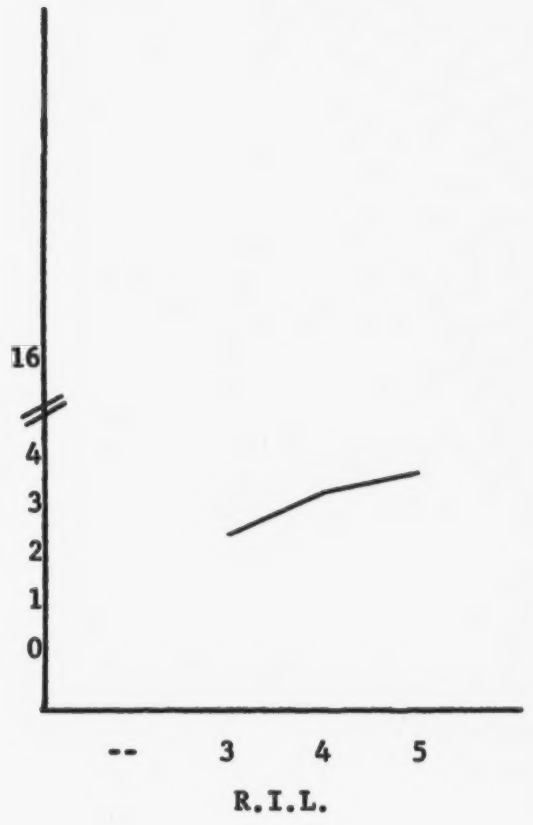


Figure 3 -- Trends in Achievement of the Retarded Group: Phonetic Analysis Skills (Continued)

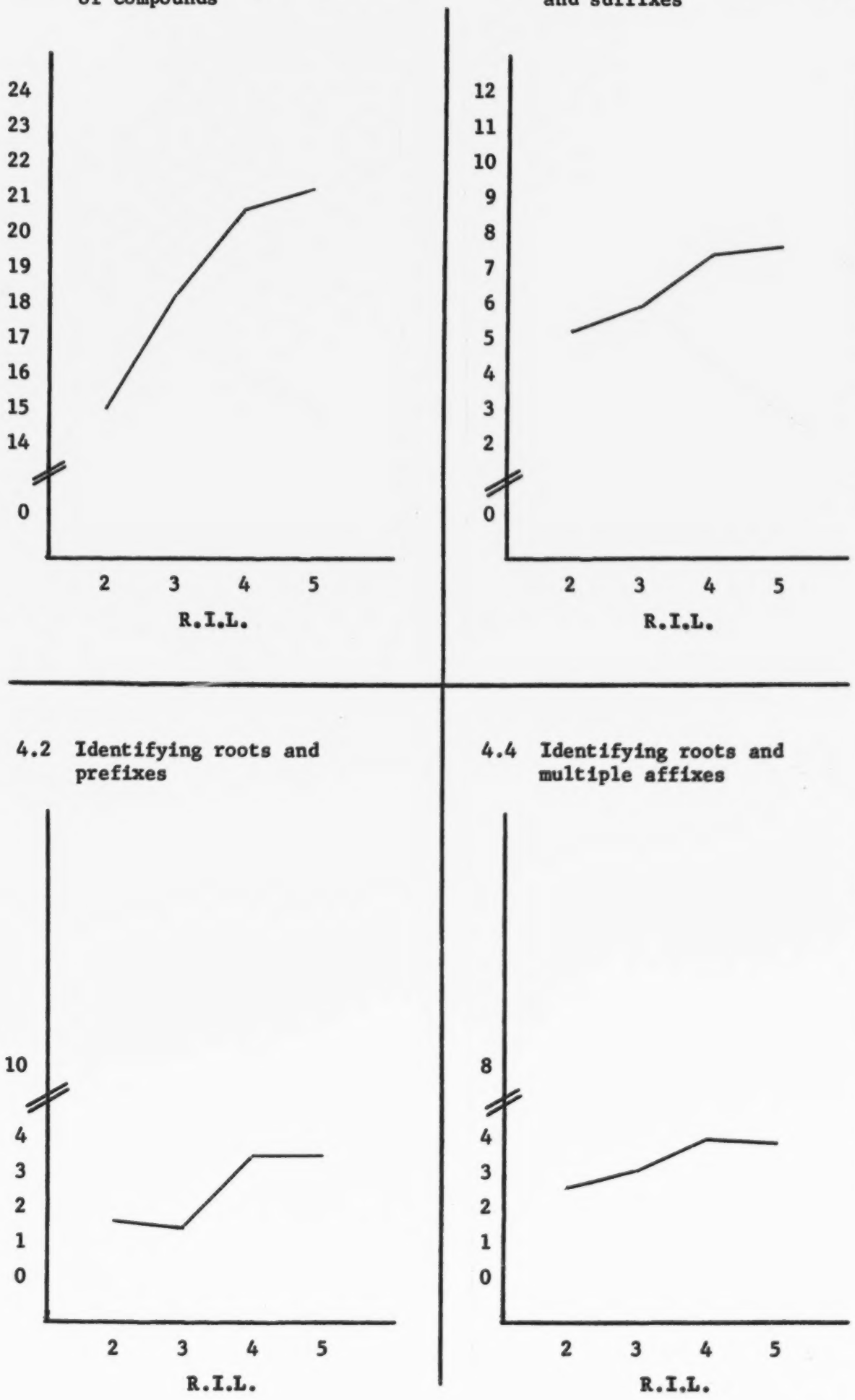
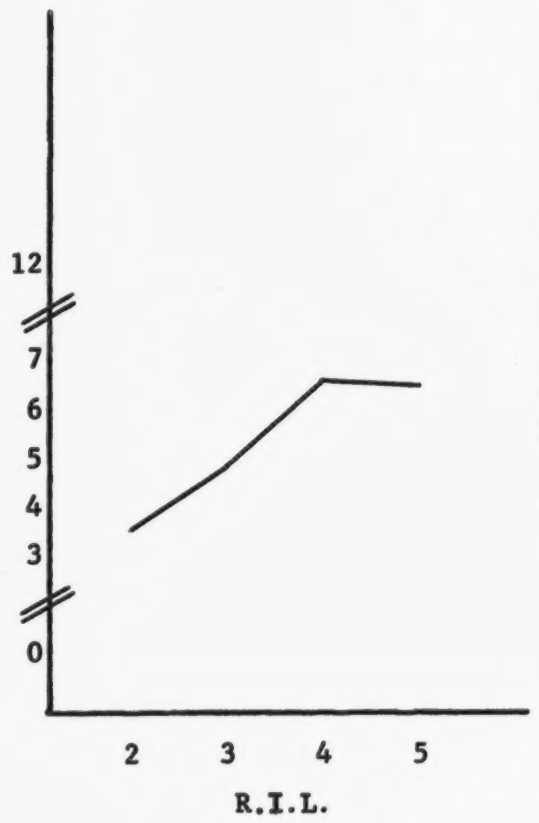
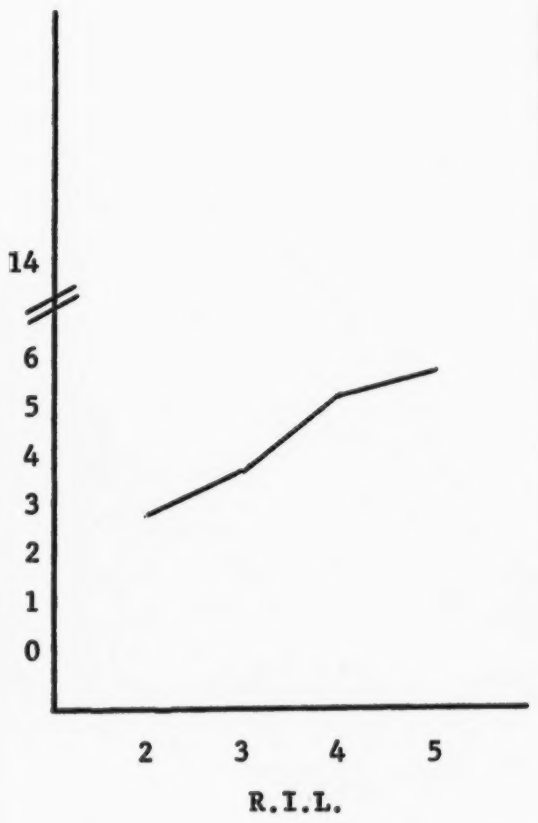


Figure 4 -- Trends in Achievement of the Retarded Group: Structural Analysis Skills

2.1 Translating contractions



4.3 Locating roots by using root-change rules



1.1 Changing roots by using root-change rules

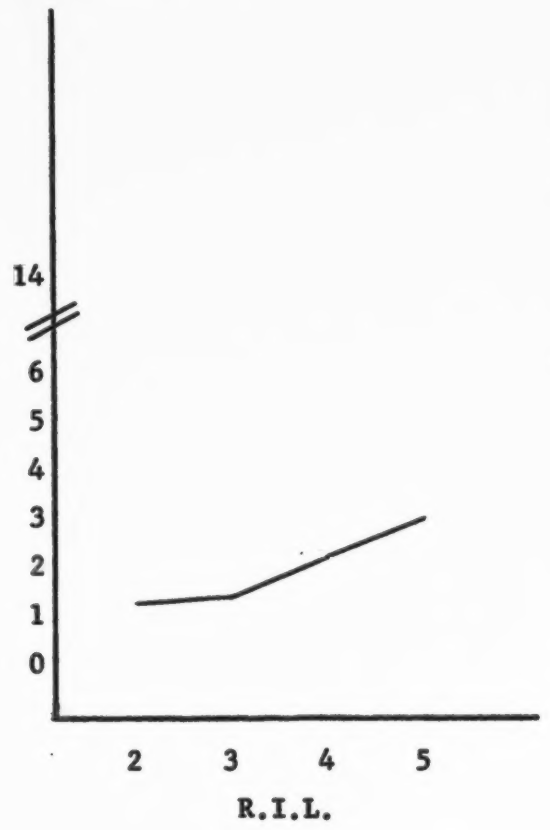
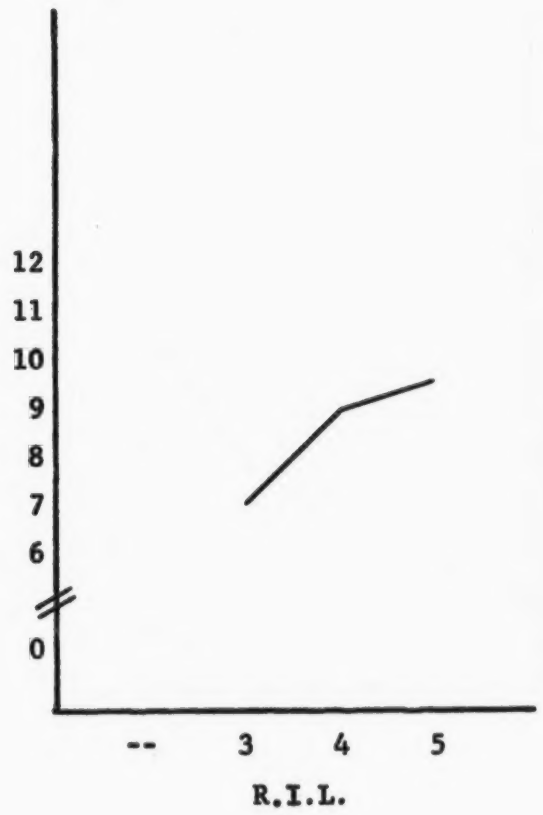
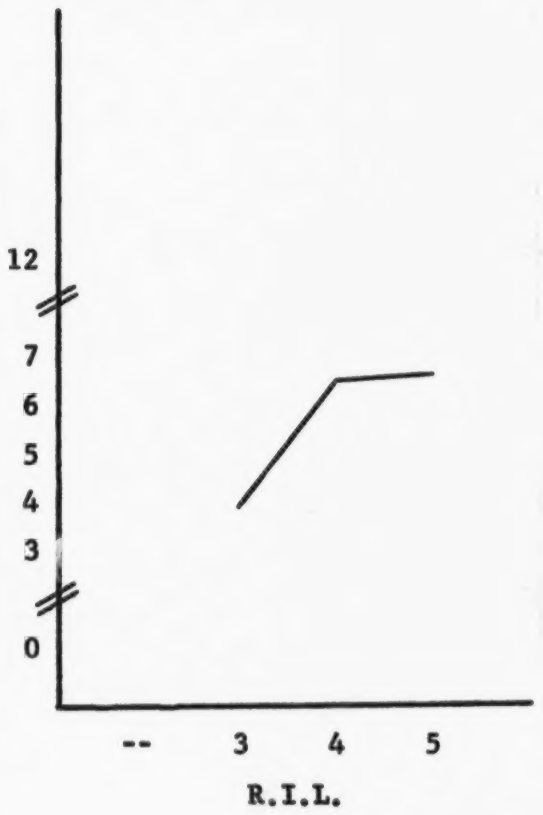


Figure 4 -- Trends in Achievement of the Retarded Group: Structural Analysis Skills (Continued)

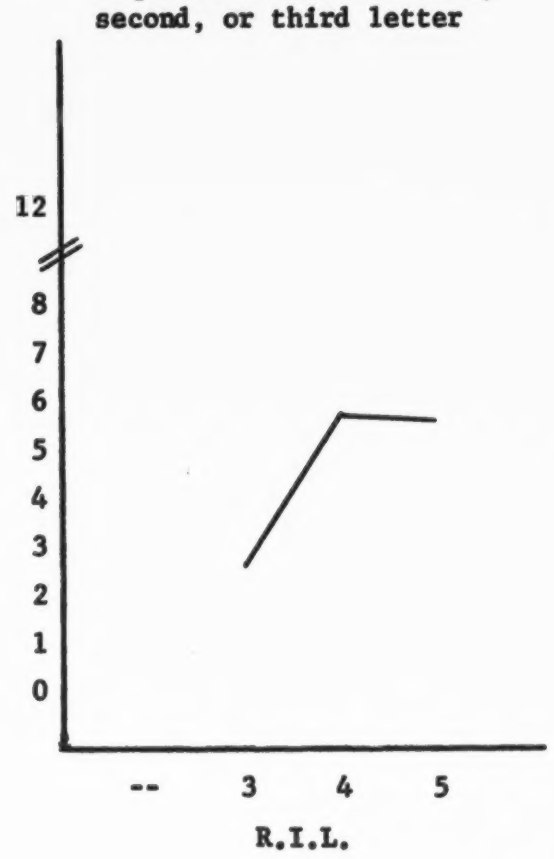
5.1 Identifying alphabetical sequences based on first letter



5.2 Identifying alphabetical sequences based on third letter



5.3 Identifying alphabetical sequences based on first, second, or third letter



6.3 Using dictionary guide words

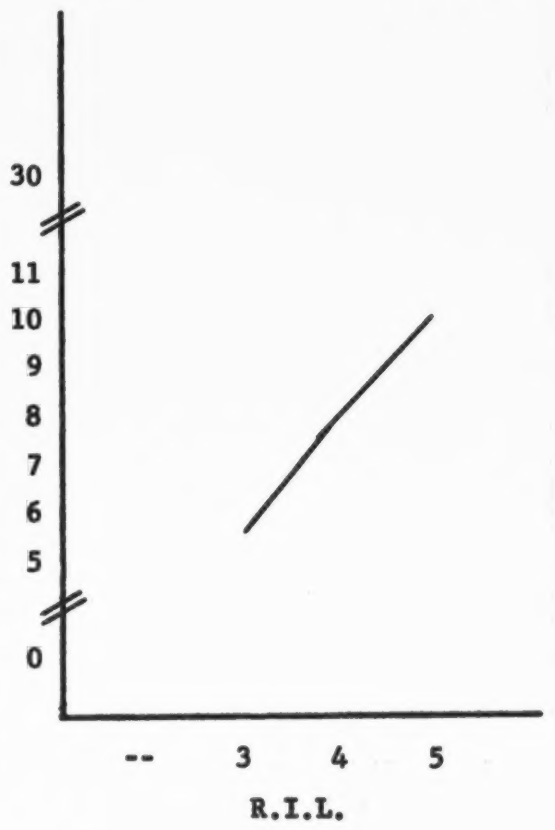
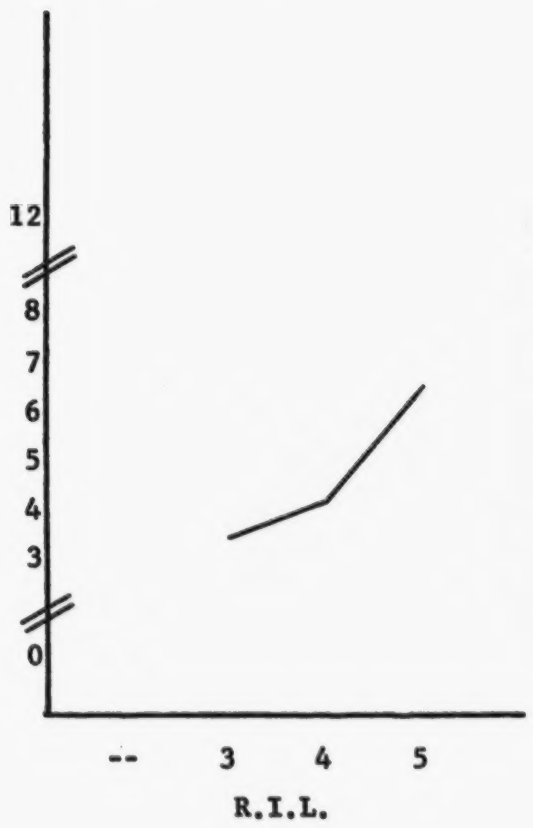
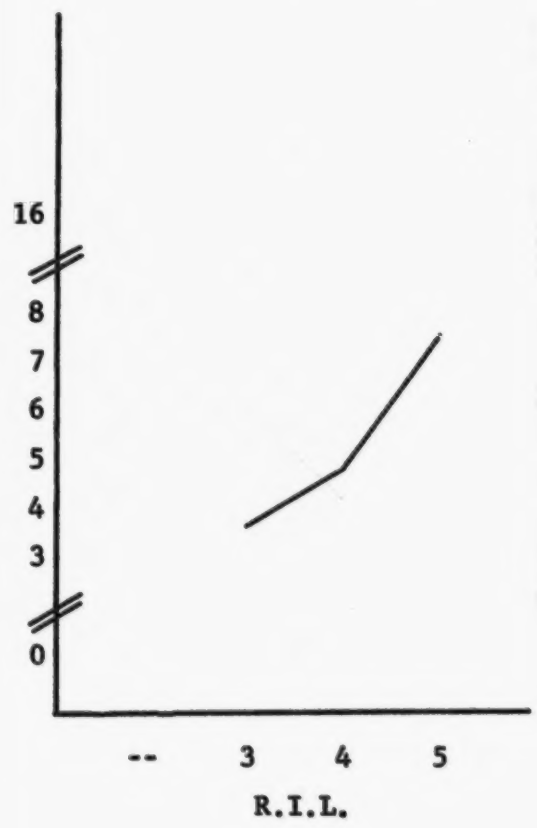


Figure 5 -- Trends in Achievement of the Retarded Group: Dictionary Skills

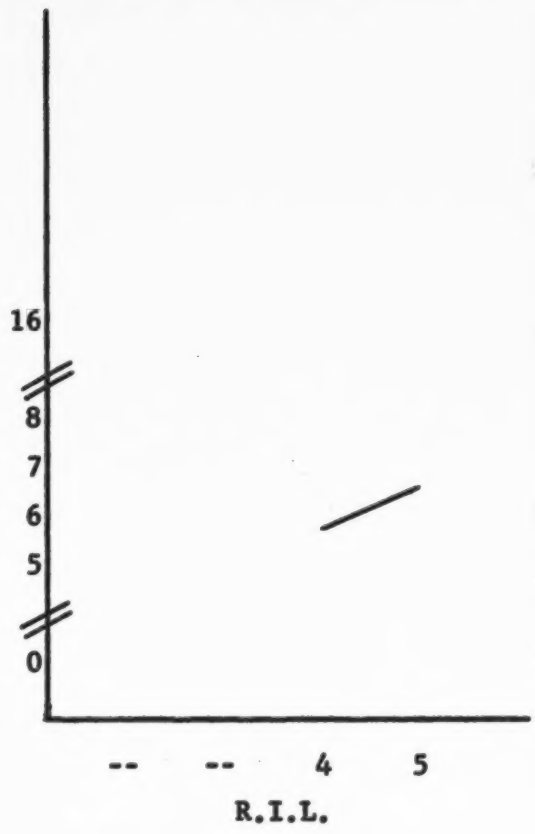
7.1 Finding definitions of single entry words



7.2 Finding definitions of multiple entry words



8.1 Selecting definitions of single entry words



8.2 Selecting definitions of multiple entry words

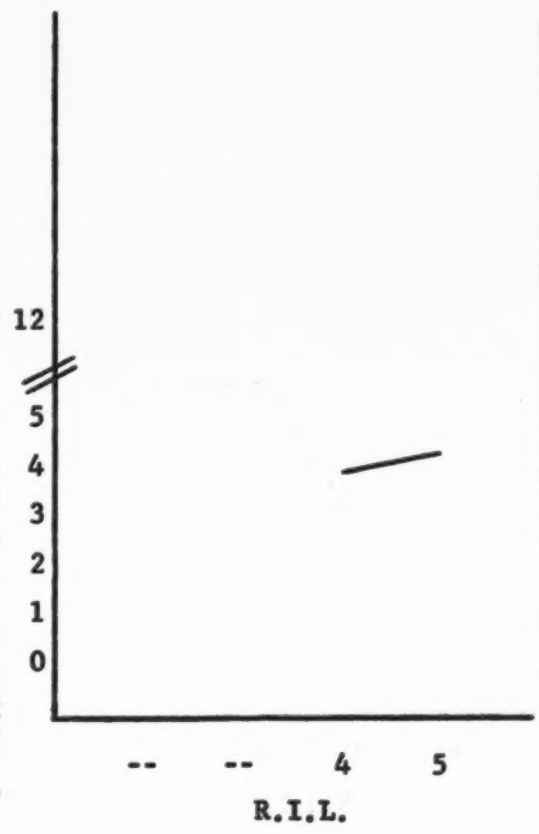
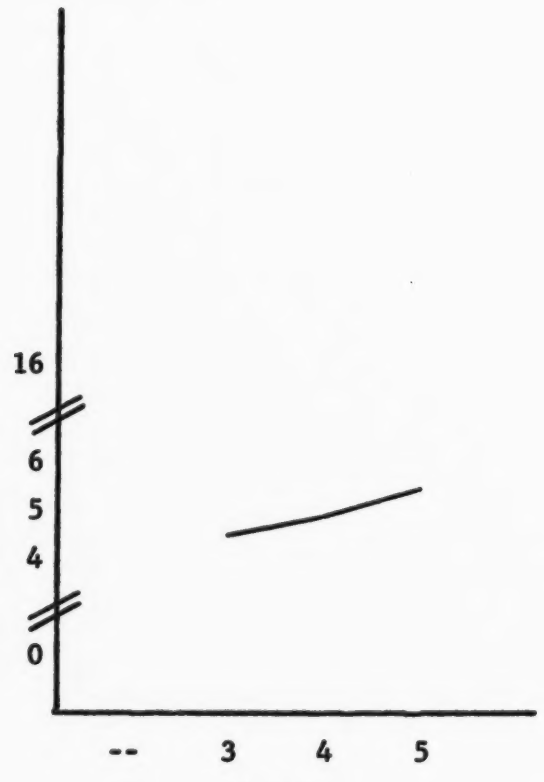


Figure 5 -- Trends in Achievement of the Retarded Group: Dictionary Skills (Continued)

9.1 Interpreting single pronunciation symbols



9.2 Interpreting multiple pronunciation symbols

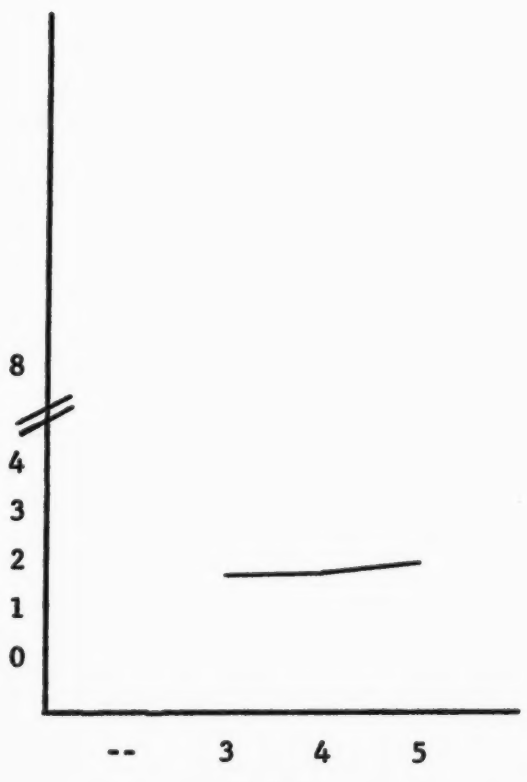
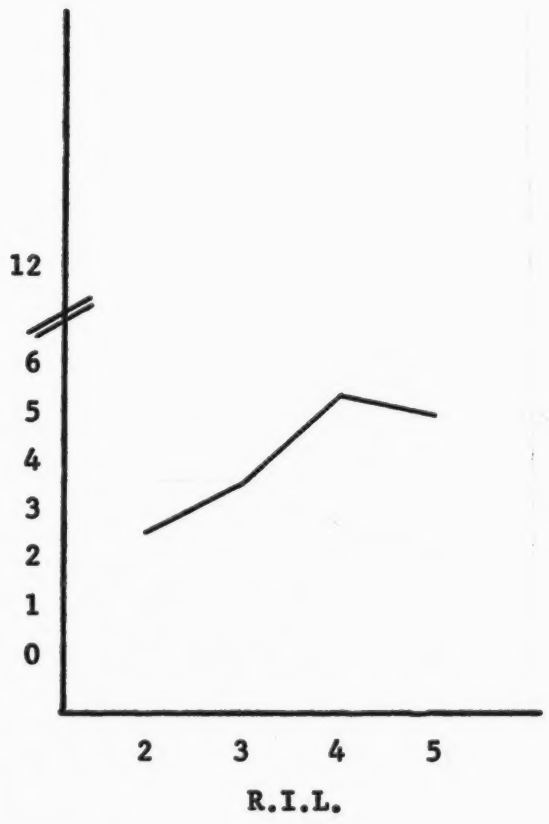
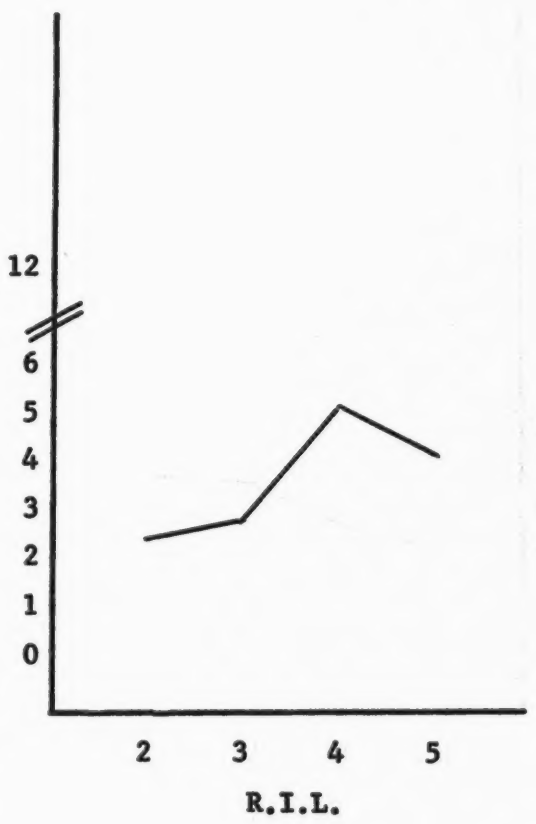


Figure 5 -- Trends in Achievement of the Retarded Group: Dictionary Skills (Continued)

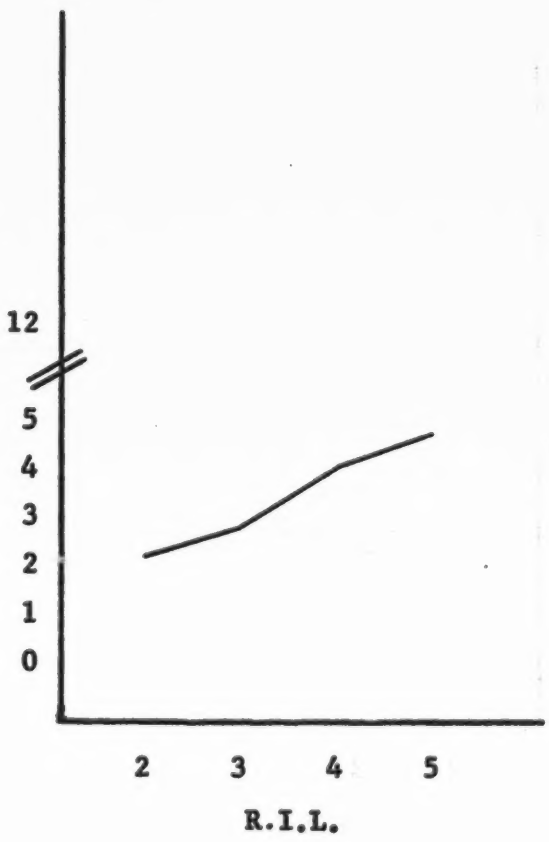
14.1 Recognizing functions of nouns



14.2 Recognizing functions of verbs



14.3 Recognizing functions of adjectives



14.4 Recognizing functions of adverbs

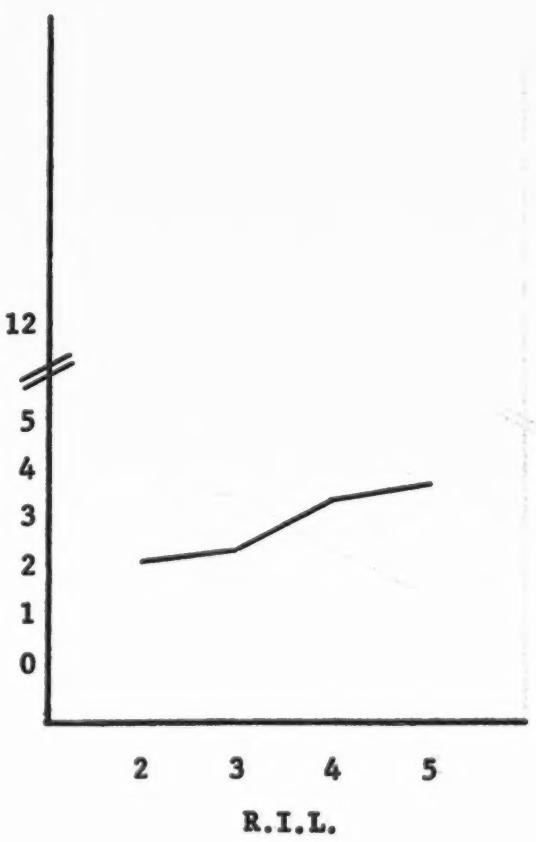
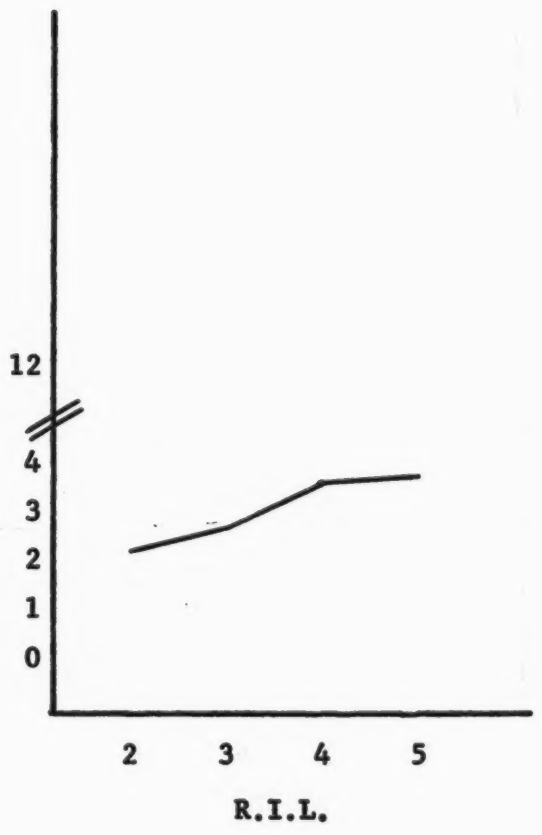
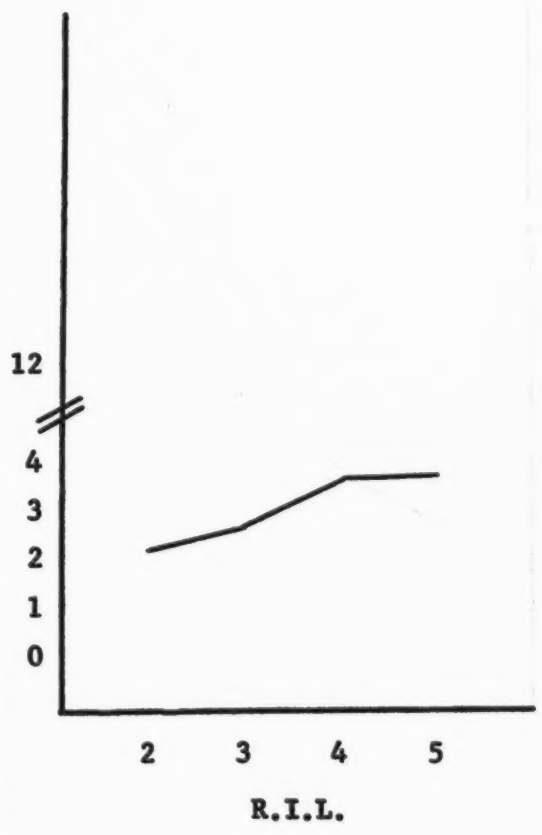


Figure 6 -- Trends in Achievement of the Retarded Group: Word Functions Skills

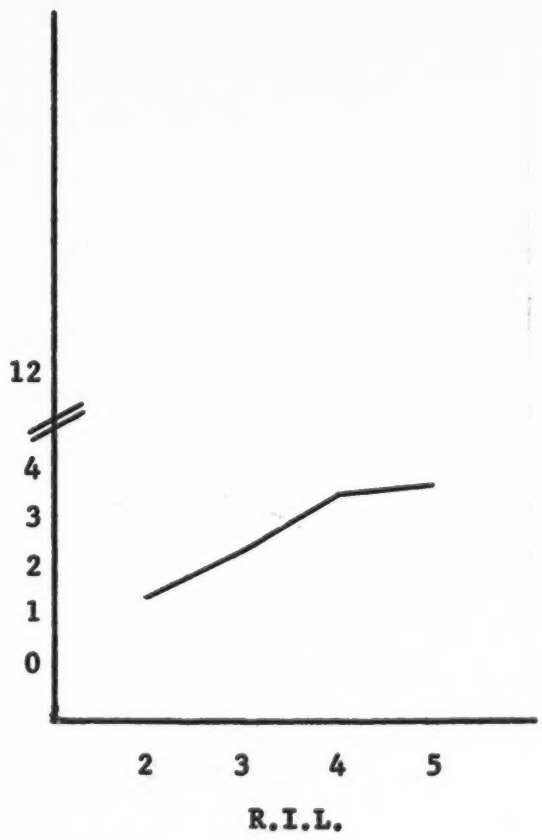
15.1 Specifying functions of nouns



15.2 Specifying functions of verbs



15.3 Specifying functions of adjectives



15.4 Specifying functions of adverbs

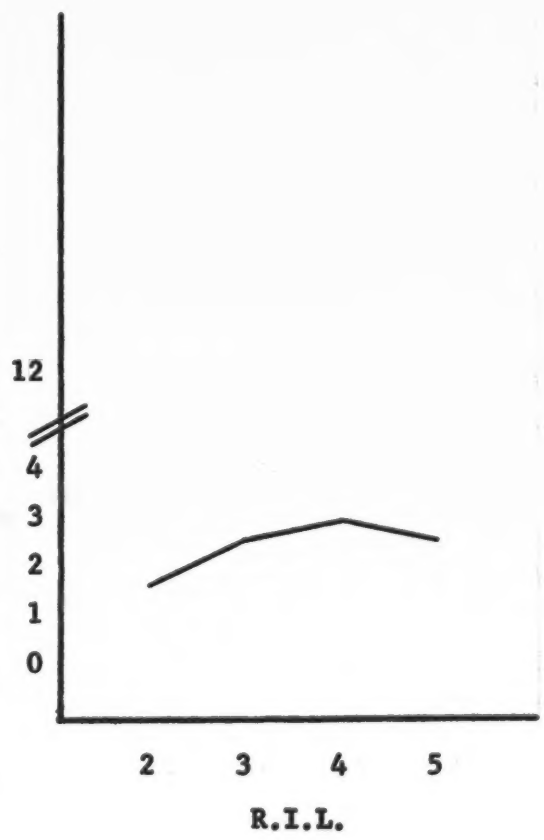
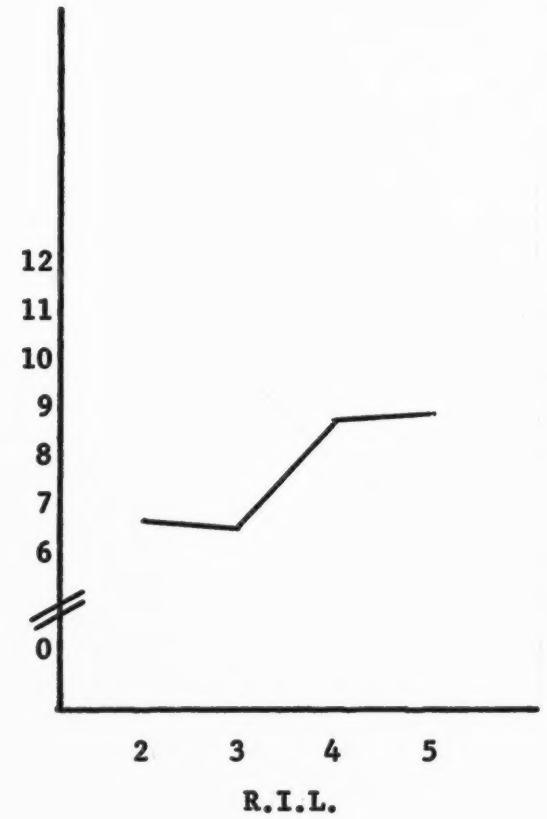
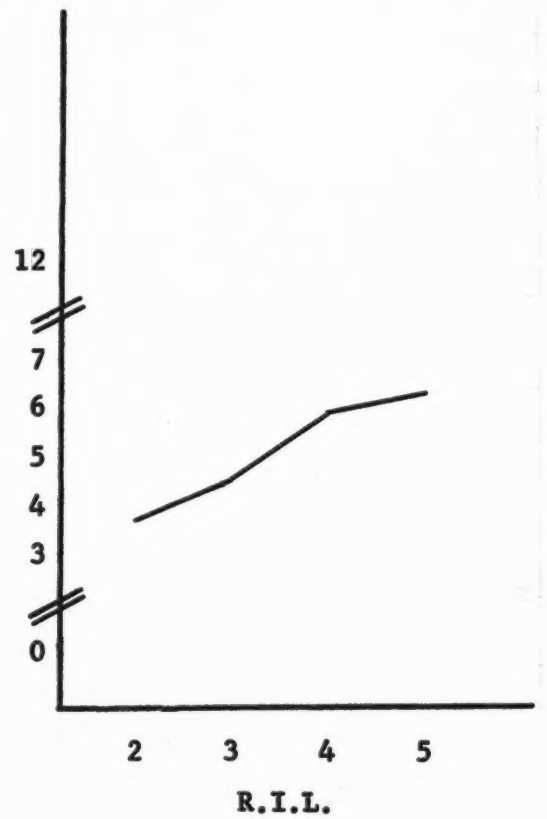


Figure 6 -- Trends in Achievement of the Retarded Group: Word Functions Skills (Continued)

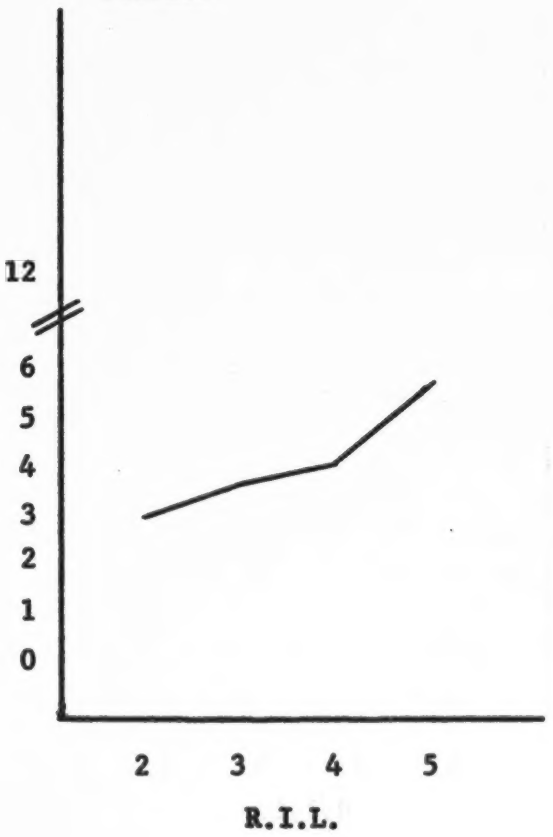
16.1 Identifying cause-effect relationships directly stated in sentences



17.3 Identifying main ideas directly stated in paragraphs



17.1 Identifying main ideas directly stated in stories



16.2 Identifying cause-effect relationships implied in sentences

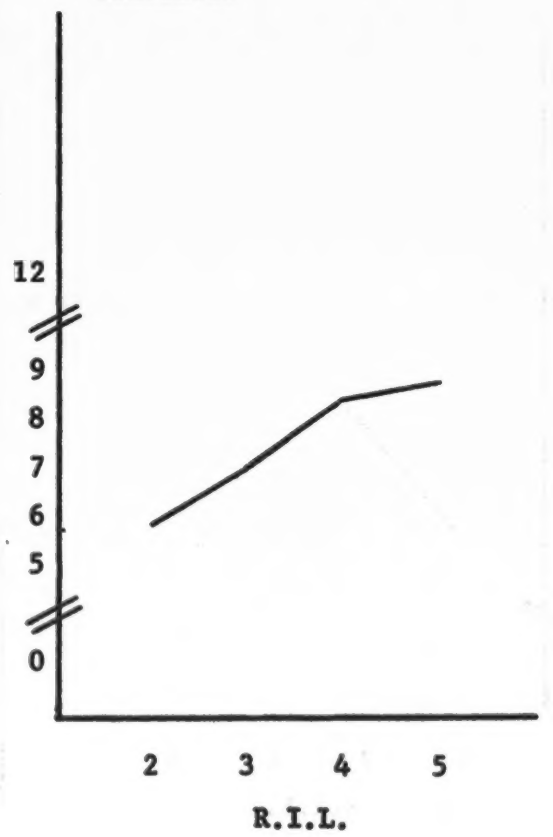
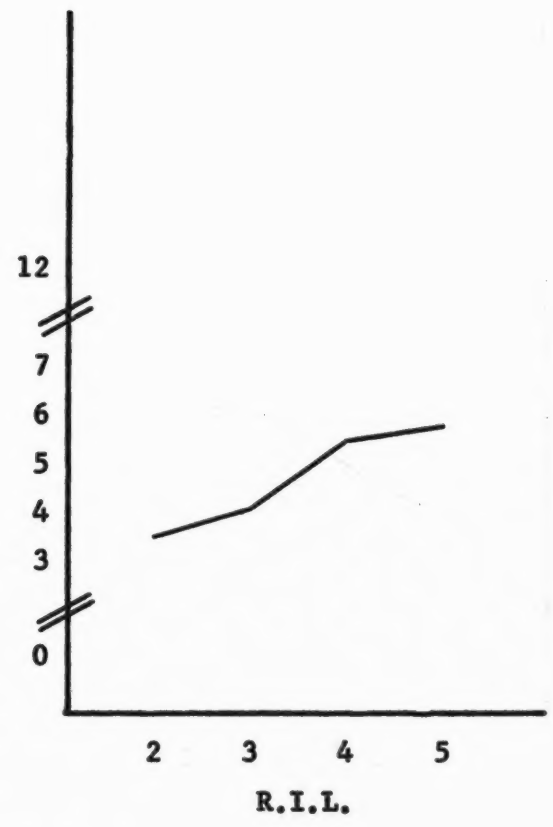
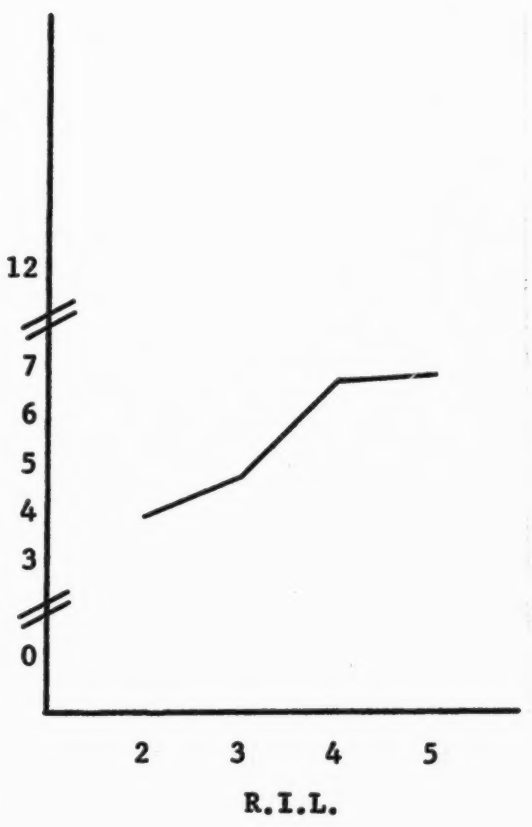


Figure 7 -- Trends in Achievement of the Retarded Group: Comprehension Skills

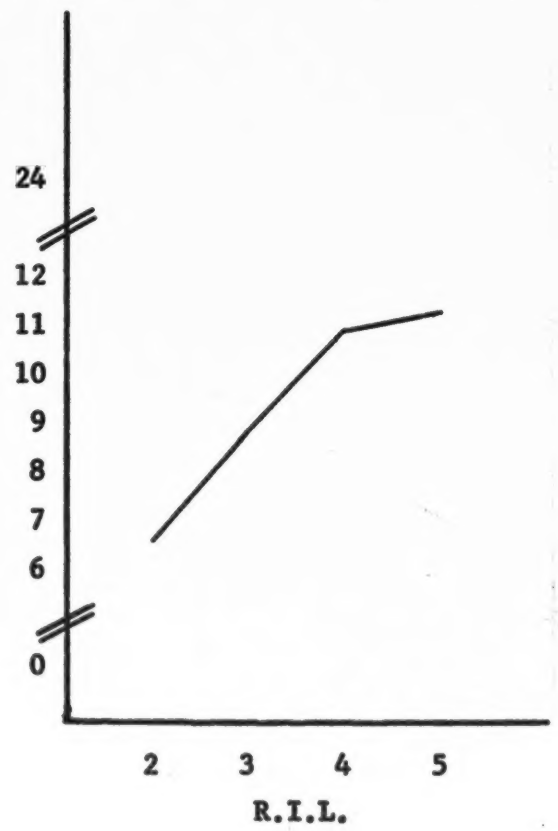
17.4 Identifying main ideas implied in paragraphs



17.2 Identifying main ideas implied in stories



17.5 Identifying details in stories



19.1 Interpreting similes

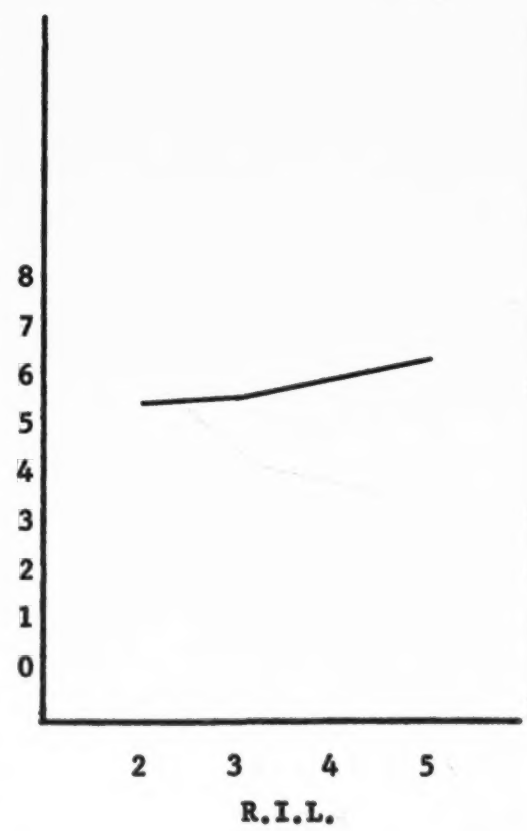
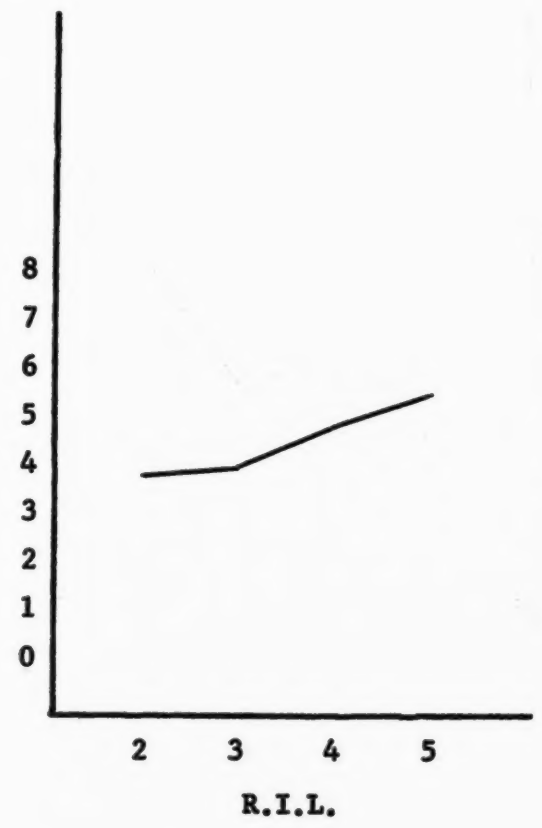
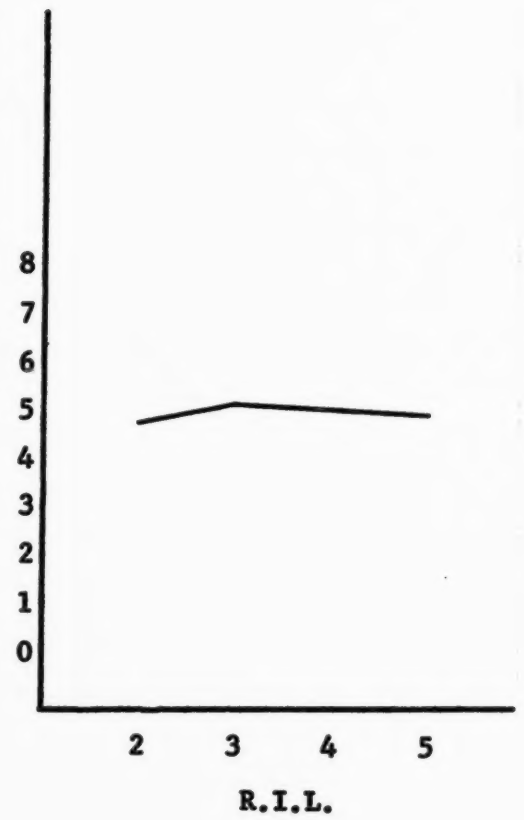


Figure 7 -- Trends in Achievement of the Retarded Group: Comprehension Skills (Continued)

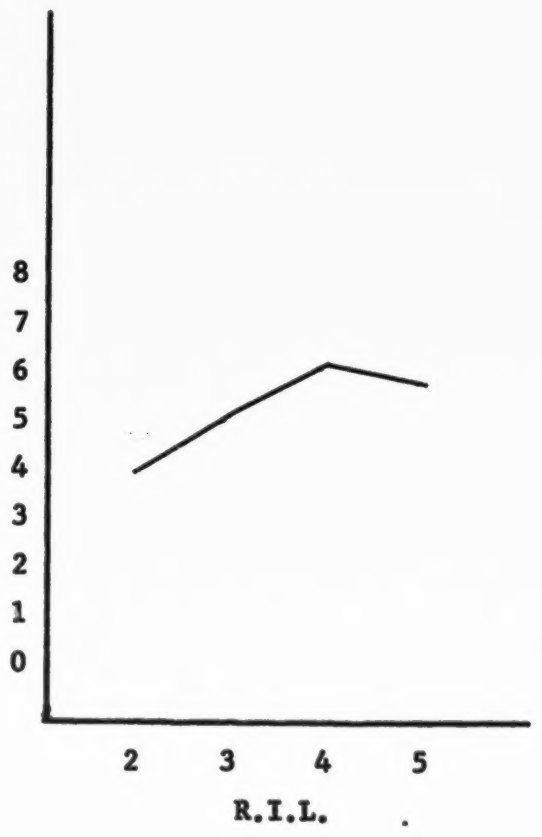
19.2 Interpreting idioms



19.3 Interpreting hyperboles



19.4 Interpreting personification



19.5 Interpreting metaphors

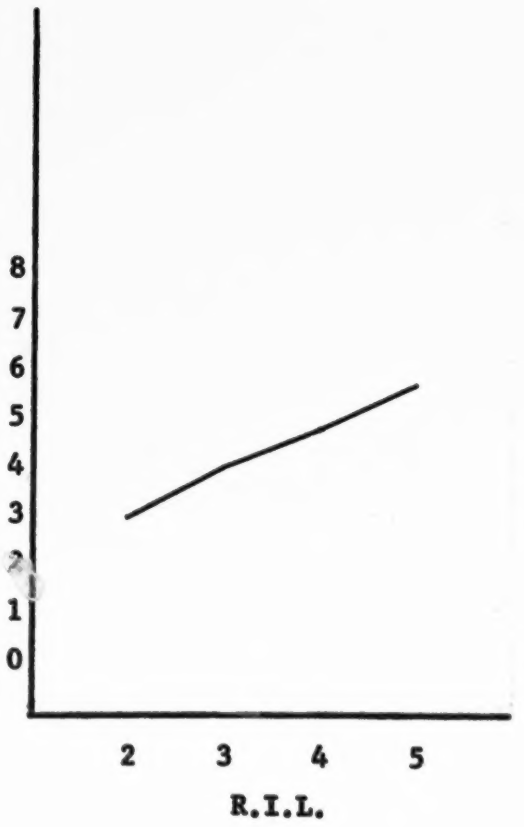
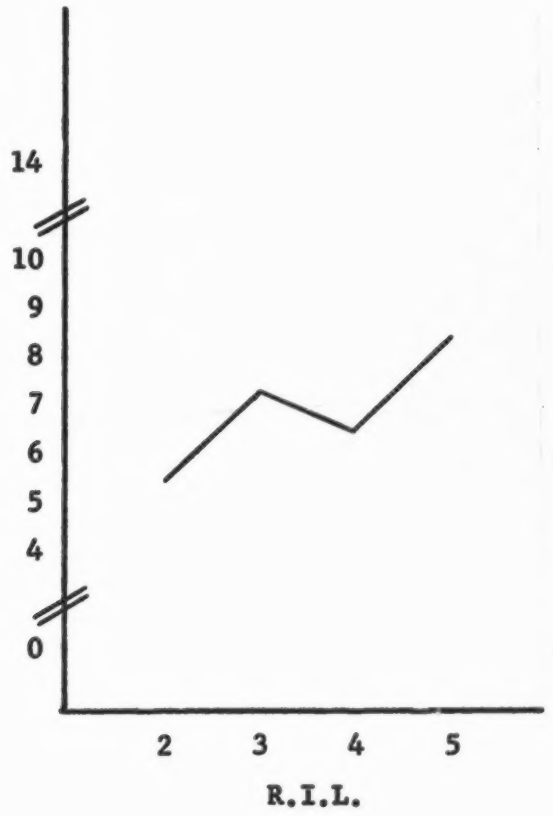
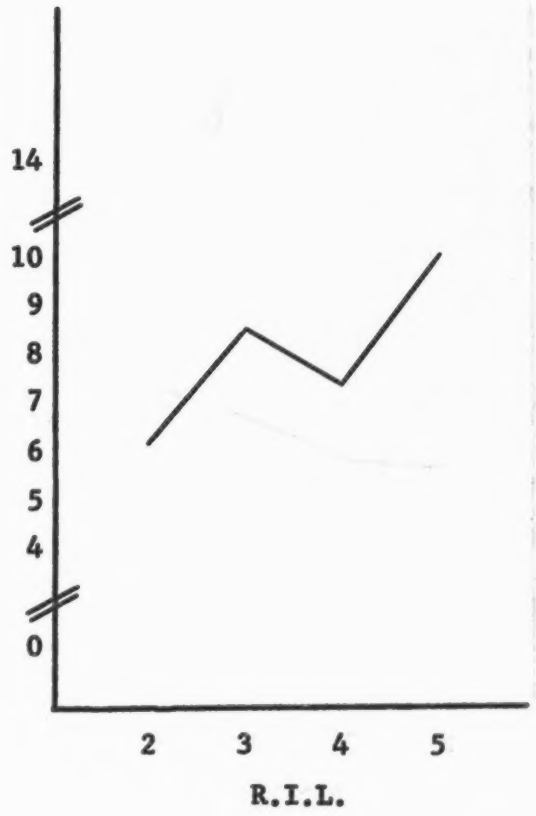


Figure 7 -- Trends in Achievement of the Retarded Group: Comprehension Skills (Continued)

20.1 Predicting outcomes and actions



20.2 Discriminating between fact and fiction



20.3 Discriminating between fact and opinion

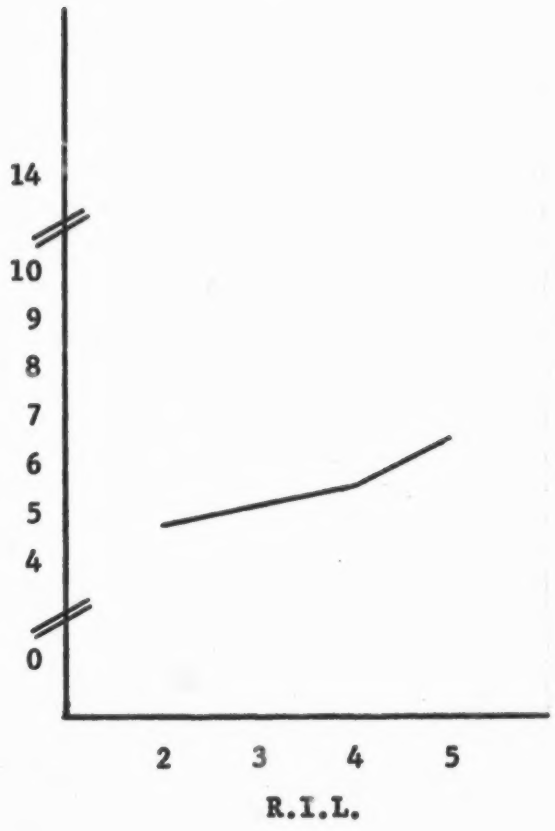


Figure 7 -- Trends in Achievement of the Retarded Group: Comprehension Skills (Continued)

Figures 8 through 13 -- Trends in Achievement of the Normal Group

18.1 Identifying words at sight

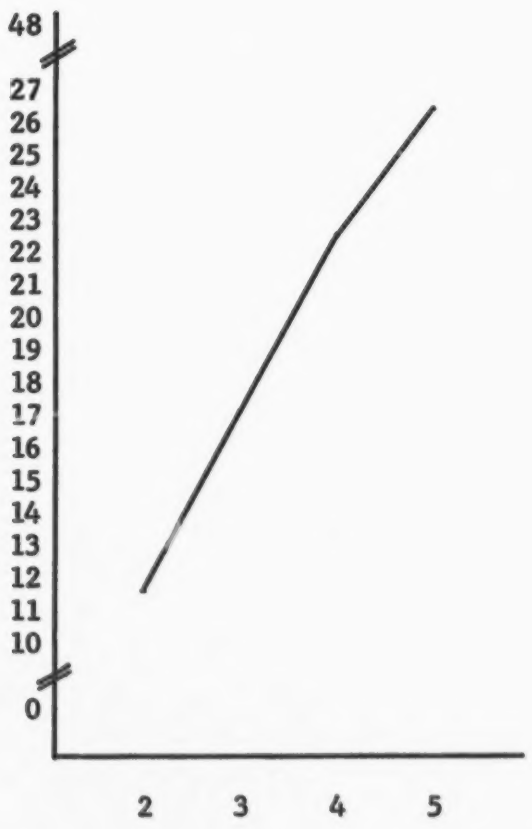
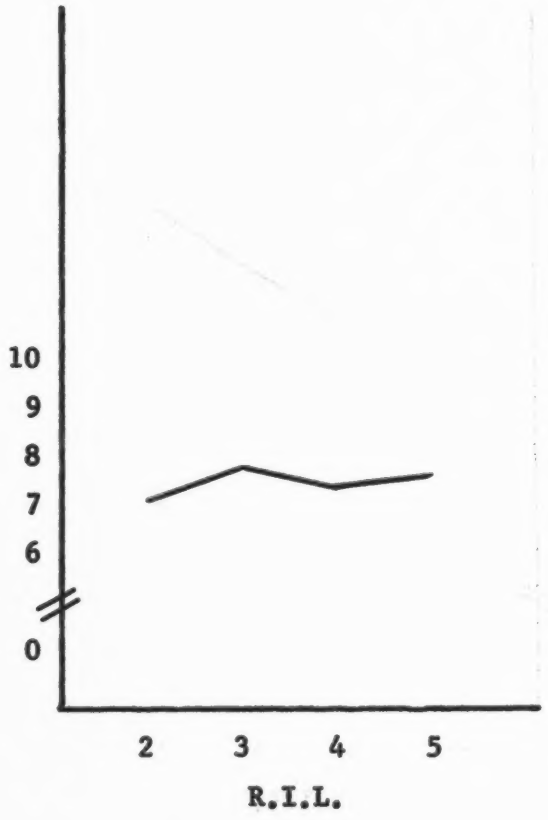
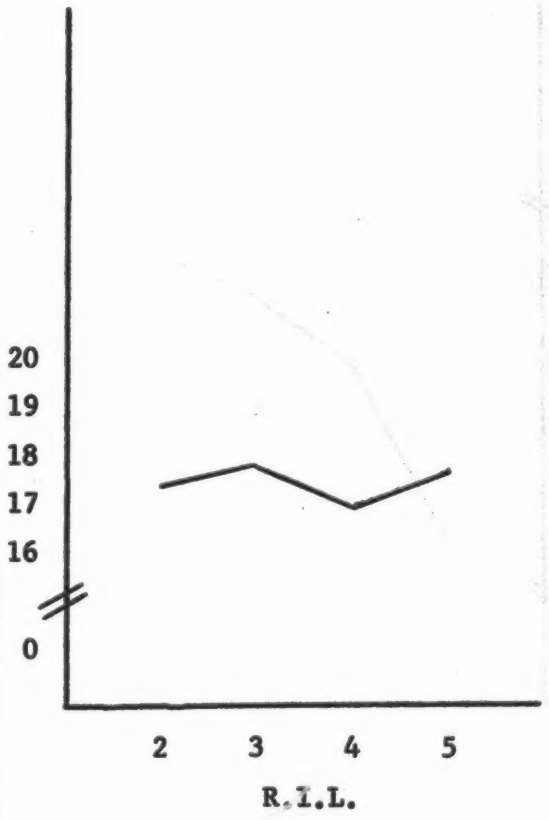


Figure 8 -- Trends in Achievement of the Normal Group: Identifying Words at Sight

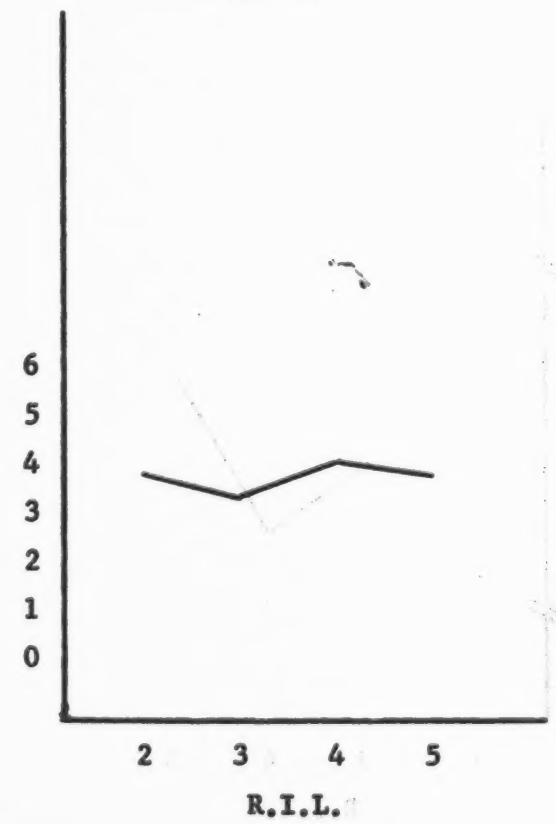
10.1 Associating vowel letters and sounds



10.2 Associating consonant letters and sounds



10.3 Associating consonant digraphs and sounds



10.8 Associating consonant blends and sounds

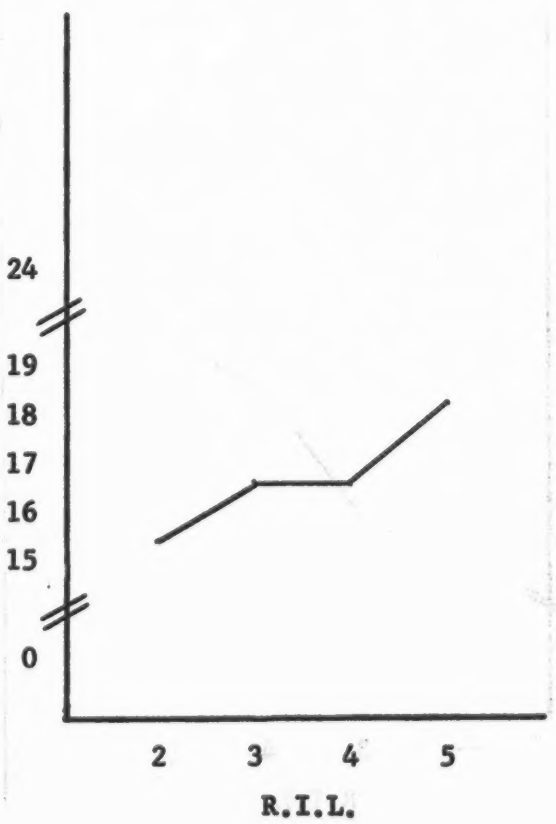
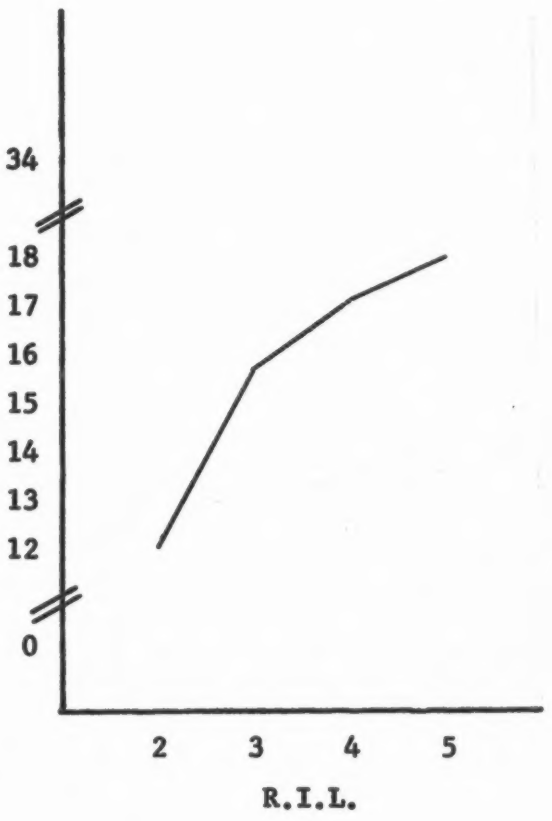
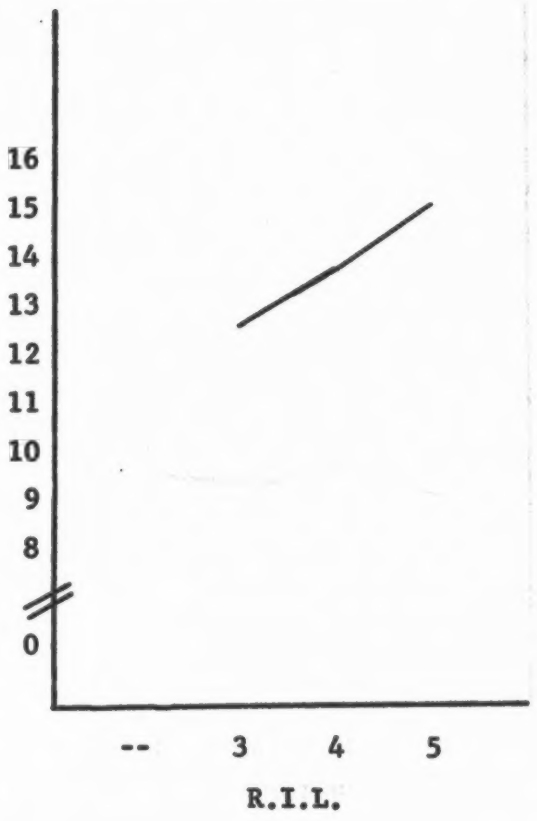


Figure 9 -- Trends in Achievement of the Normal Group: Phonetic Analysis Skills

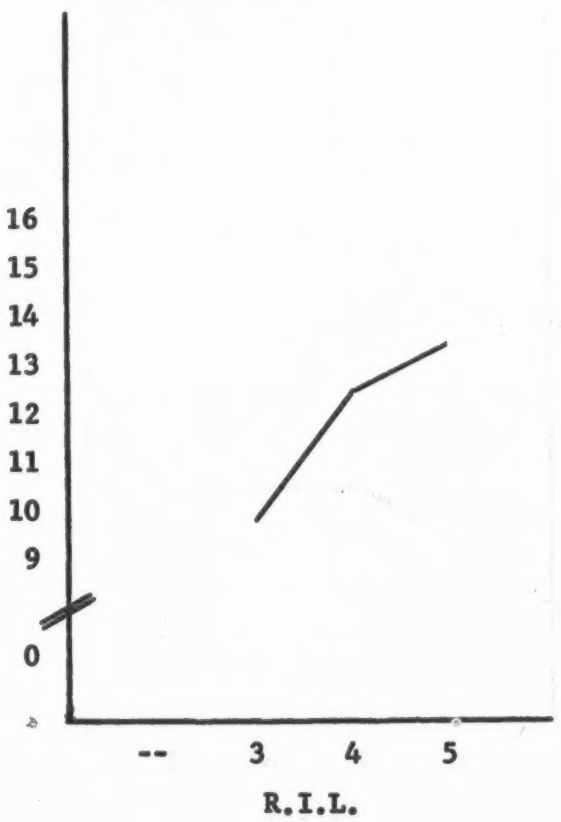
11.3 Using spelling patterns



13.1 Identifying syllables in orally and visually presented short words



12.1 Identifying syllables in visually presented short words



13.2 Identifying syllables in orally and visually presented long words

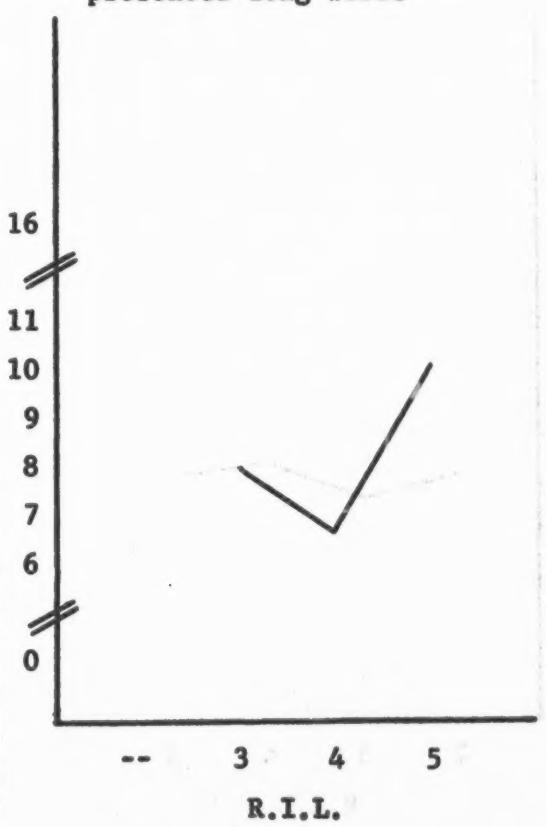


Figure 9 -- Trends in Achievement of the Normal Group: Phonetic Analysis Skills (Continued)

12.2 Identifying syllables in visually presented long words

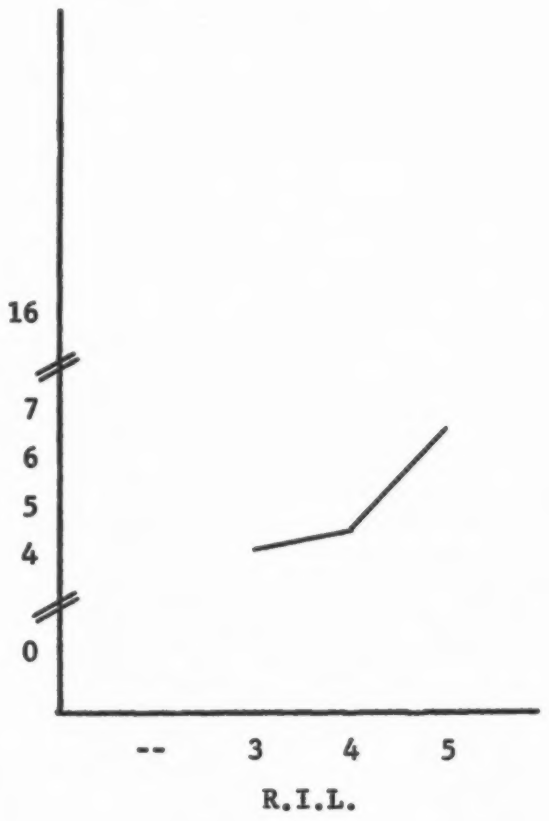
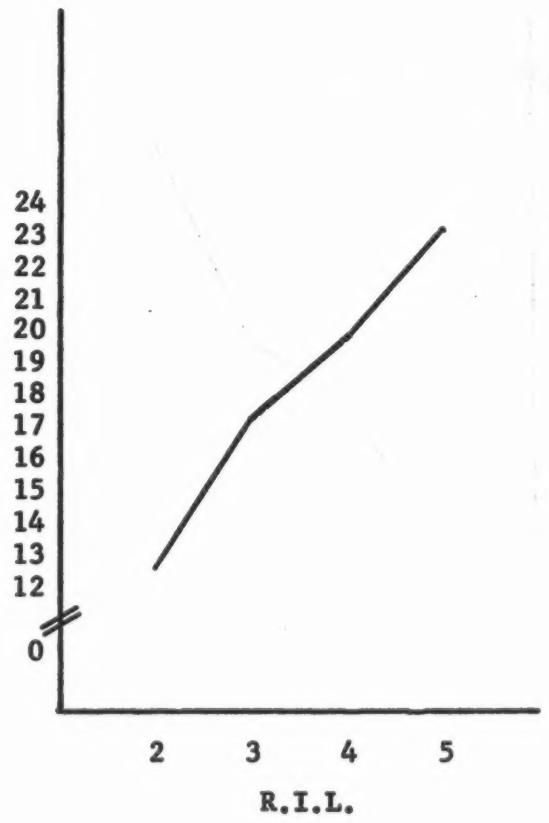
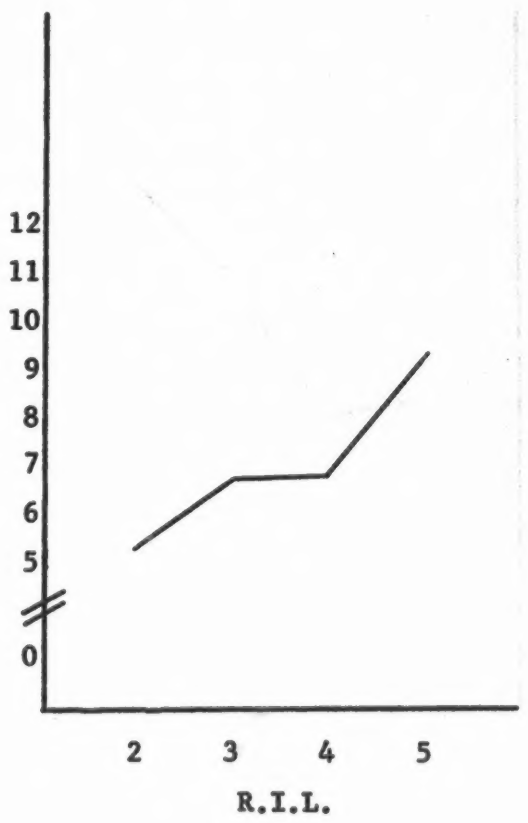


Figure 9 -- Trends in Achievement of the Normal Group: Phonetic Analysis Skills (Continued)

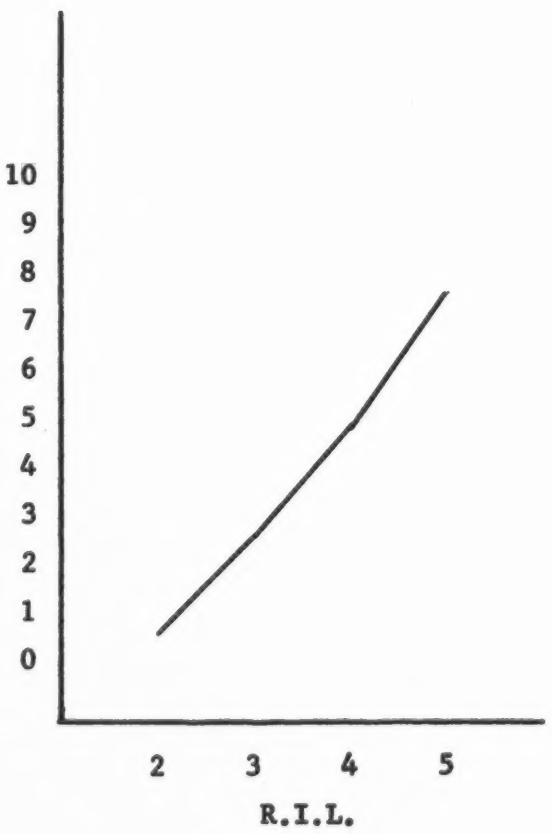
3.1 Identifying components of compounds



4.1 Identifying roots, endings, and suffixes



4.2 Identifying roots and prefixes



4.4 Identifying roots and multiple affixes

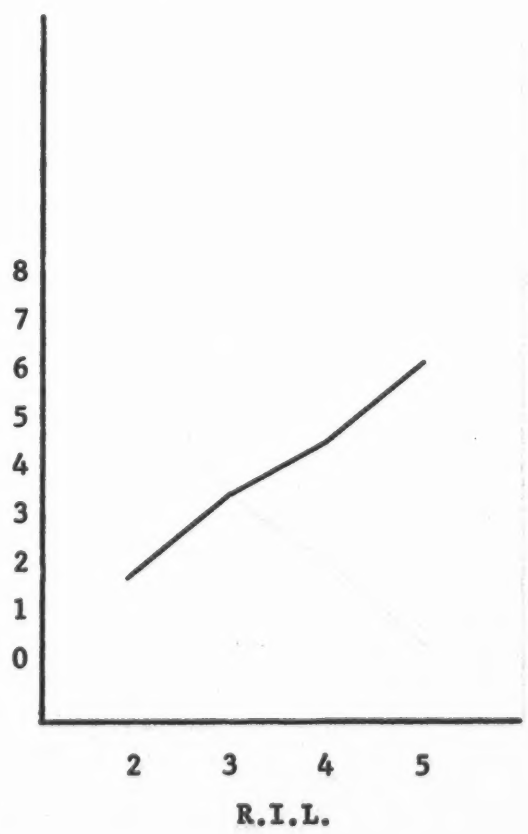
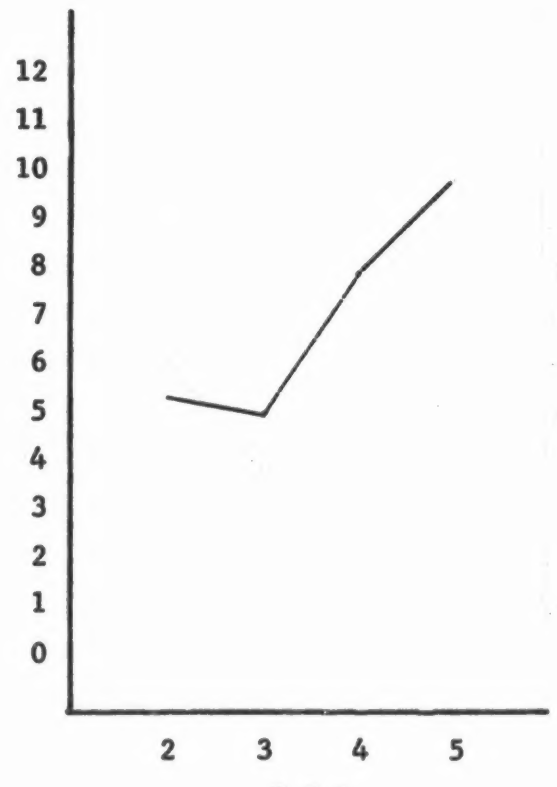
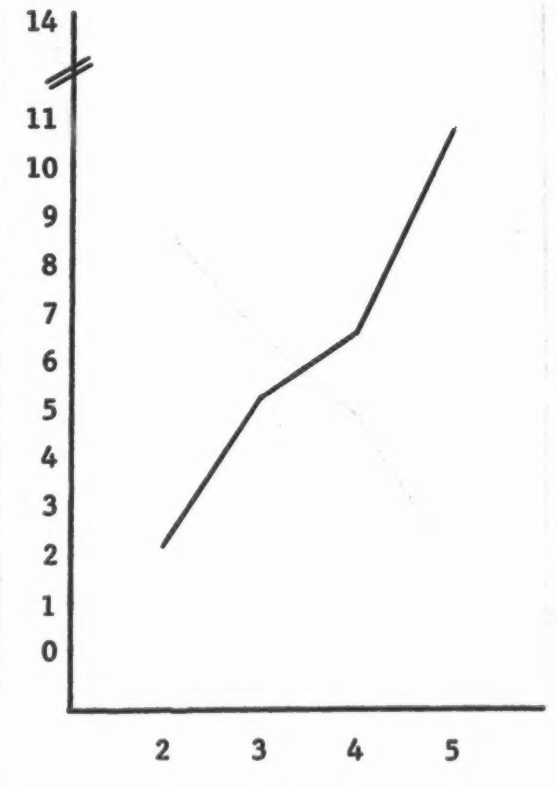


Figure 10 -- Trends in Achievement of the Normal Group: Structural Analysis Skills

2.1 Translating contractions



4.3 Locating roots by using root-change rules



1.1 Changing roots by using root-change rules

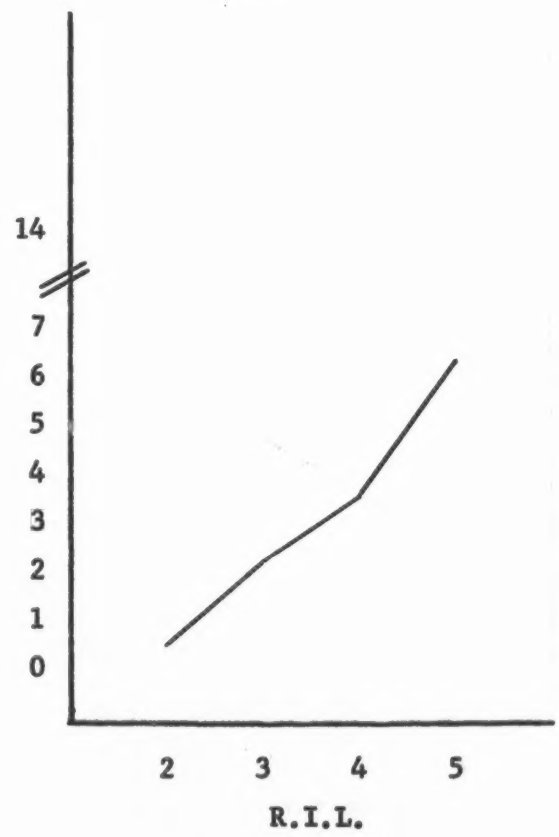
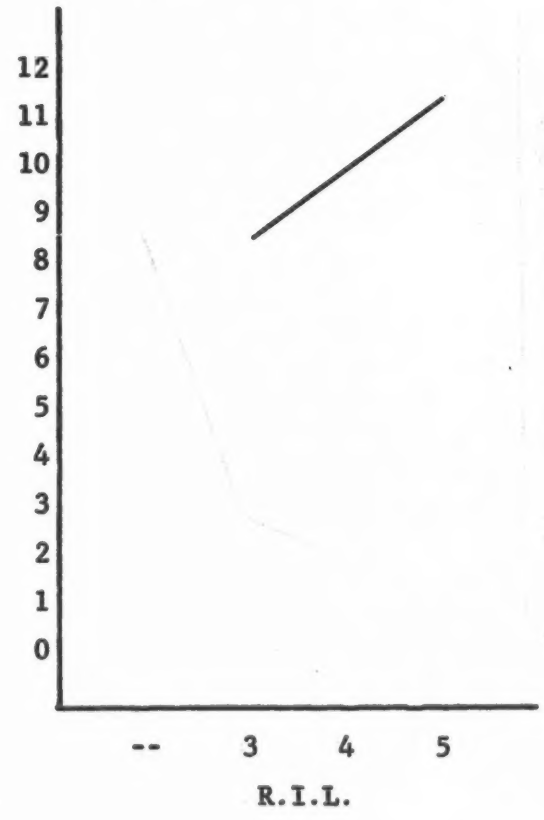
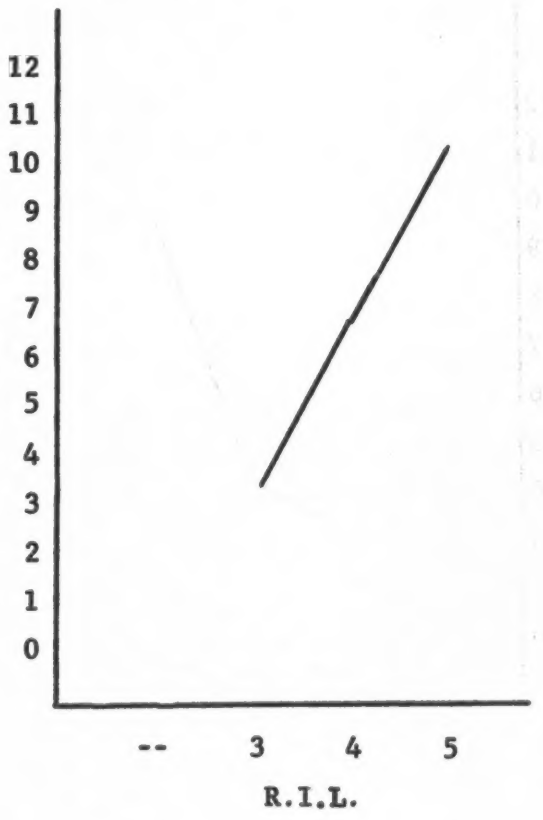


Figure 10-- Trends in Achievement of the Normal Group: Structural Analysis Skills (Continued)

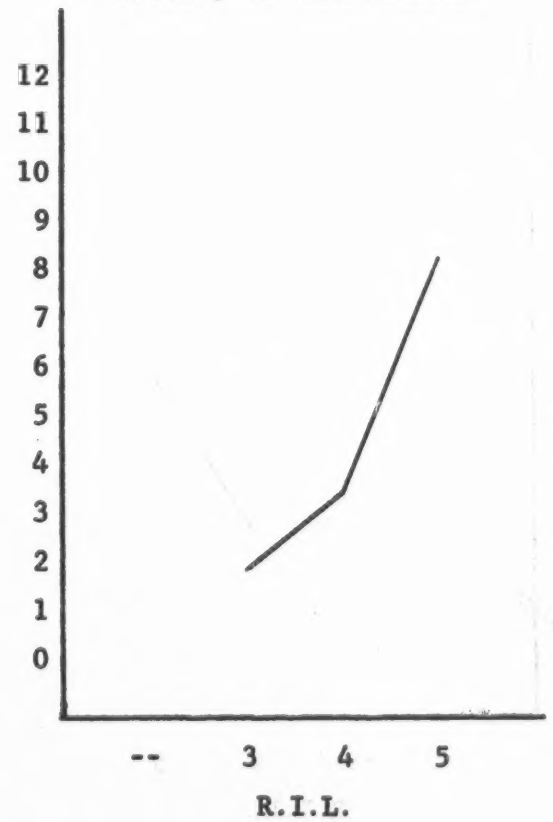
5.1 Identifying alphabetical sequences based on first letter



5.2 Identifying alphabetical sequences based on third letter



5.3 Identifying alphabetical sequences based on first, second, or third letter



6.3 Using dictionary guide words

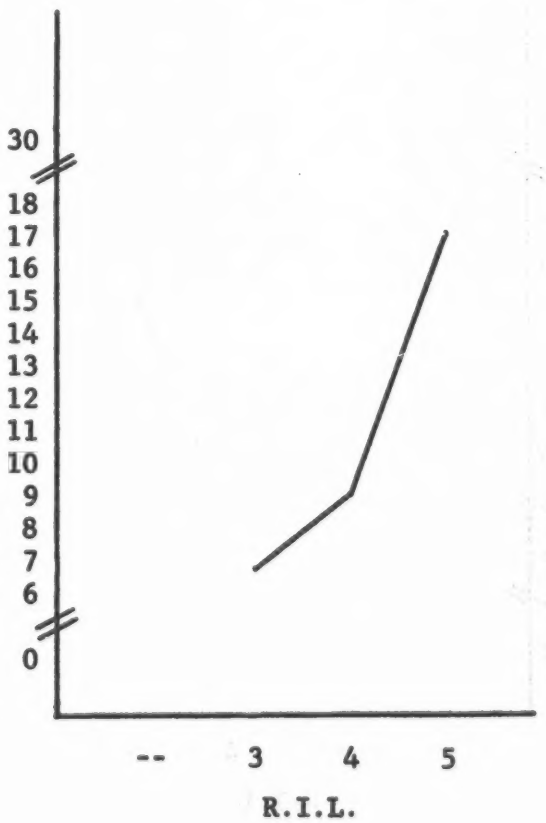
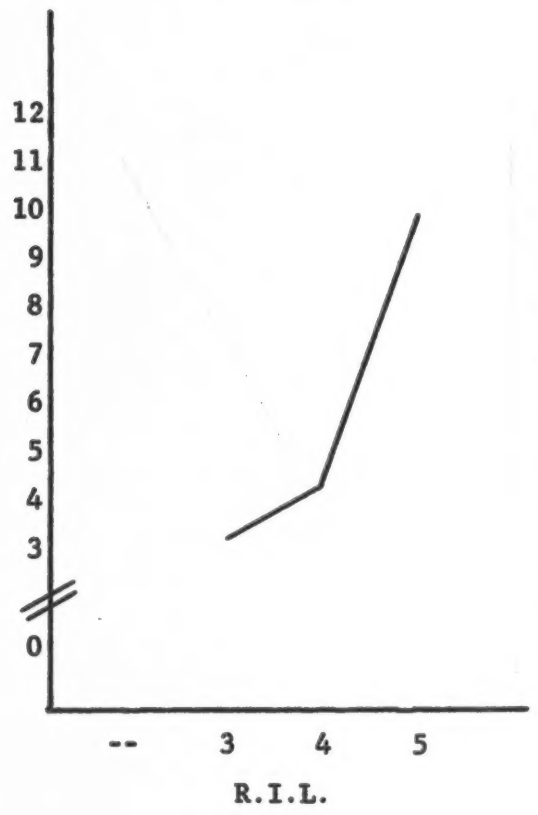
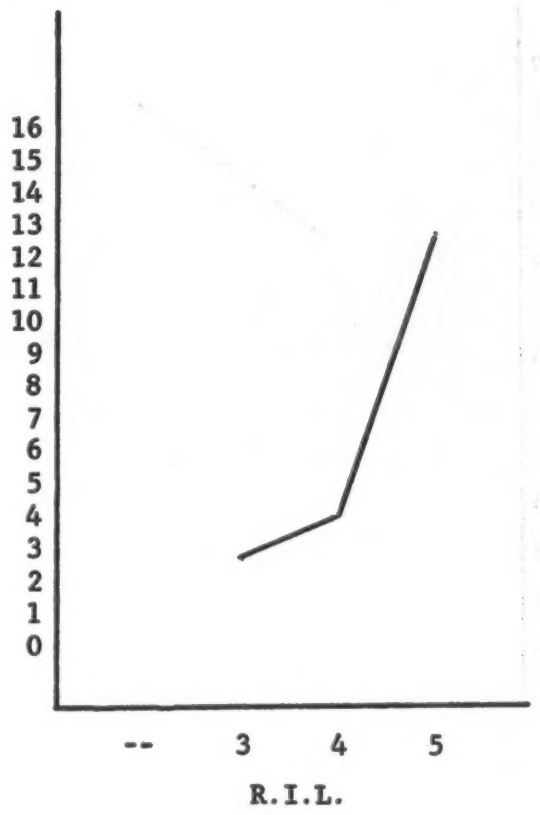


Figure 11-- Trends in Achievement of the Normal Group: Dictionary Skills

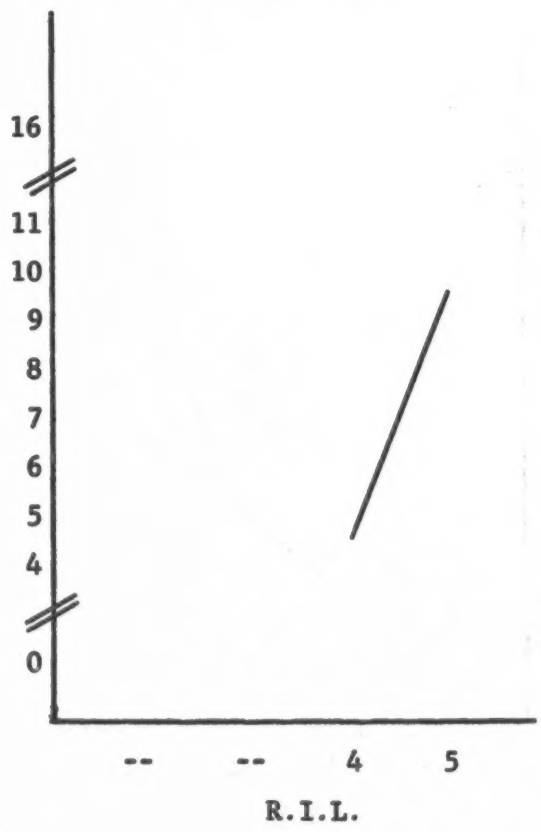
7.1 Finding definitions of single entry words



7.2 Finding definitions of multiple entry words



8.1 Selecting definitions of single entry words



8.2 Selecting definitions of multiple entry words

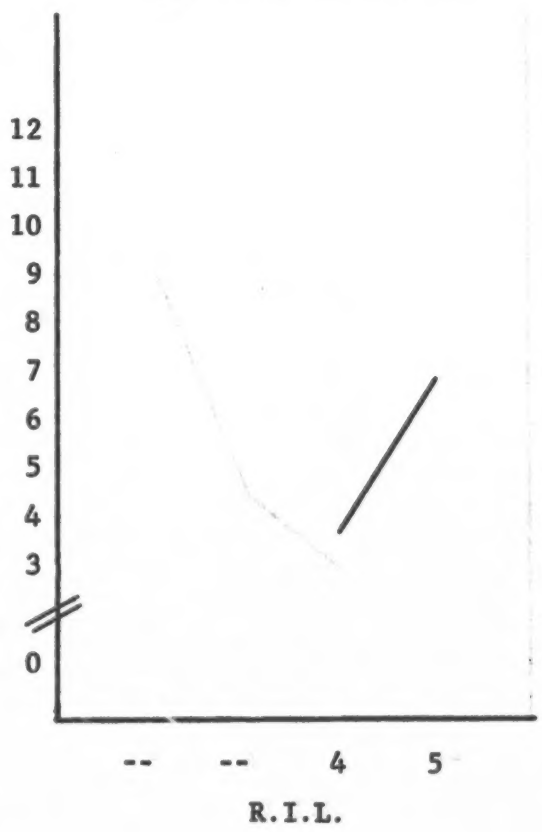
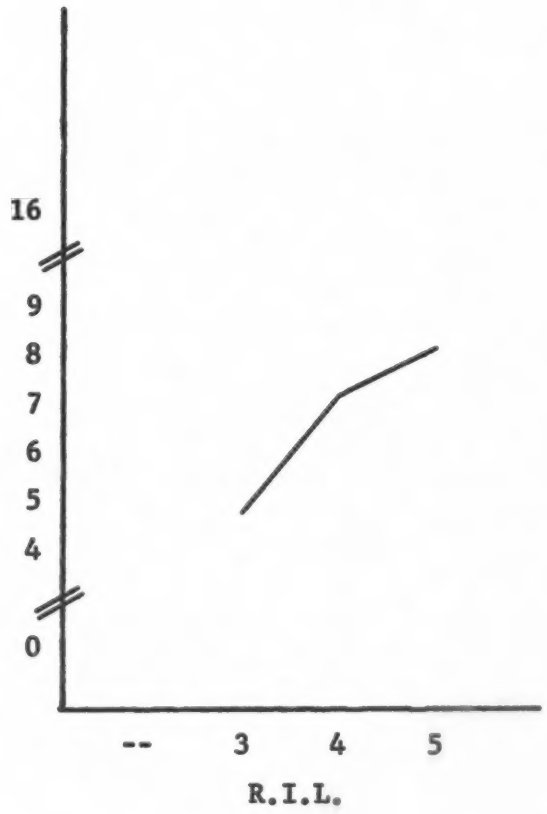


Figure 11-- Trends in Achievement of the Normal Group: Dictionary Skills (Continued)

9.1 Interpreting single pronunciation symbols



9.2 Interpreting multiple pronunciation symbols

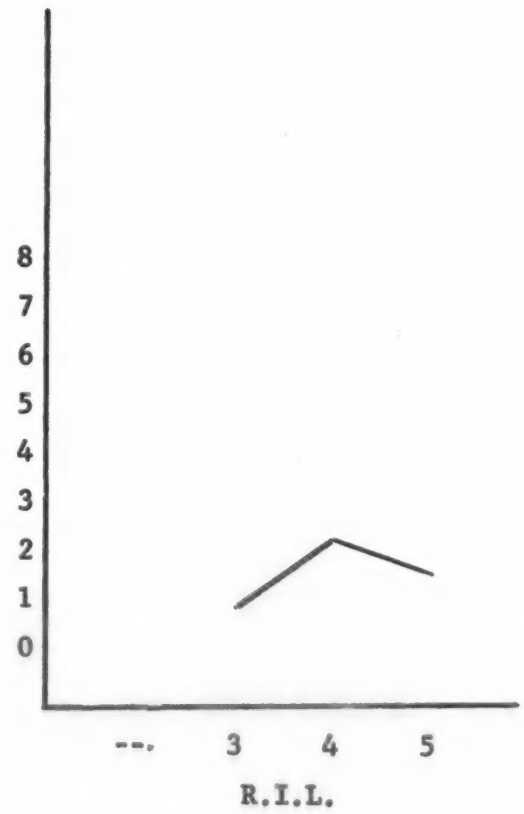
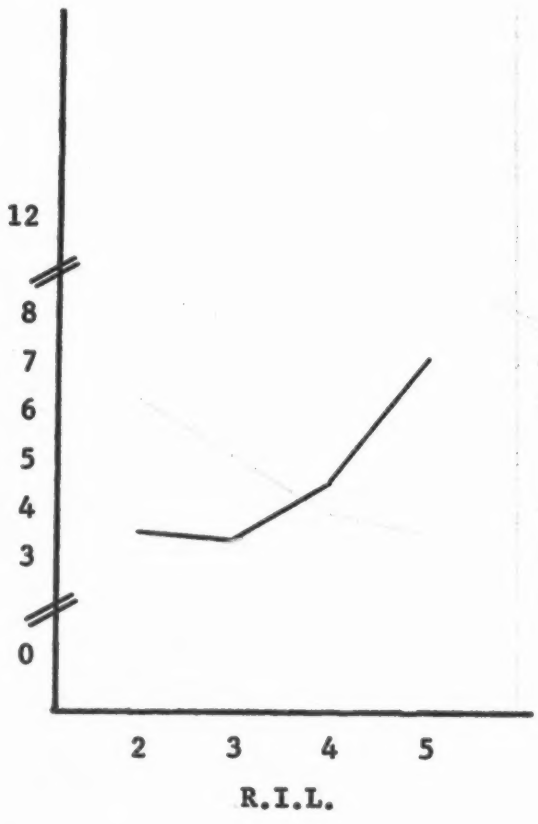
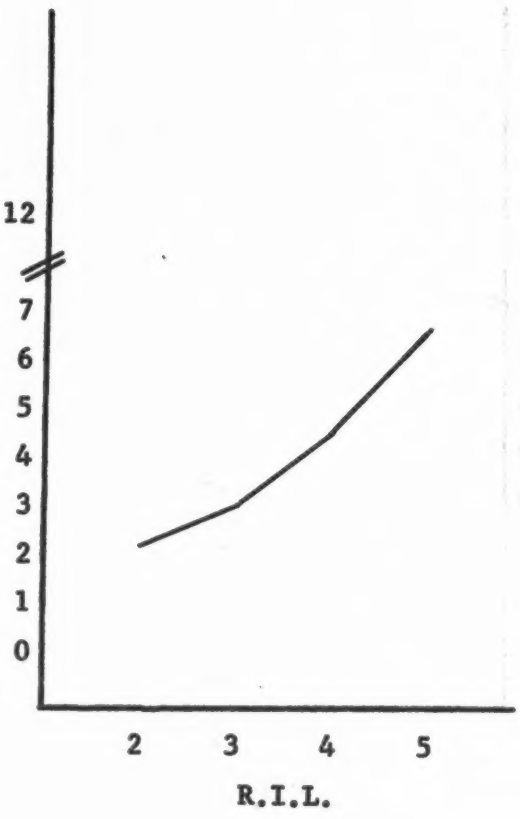


Figure 11-- Trends in Achievement o the Normal Group: Dictionary Skills (Continued)

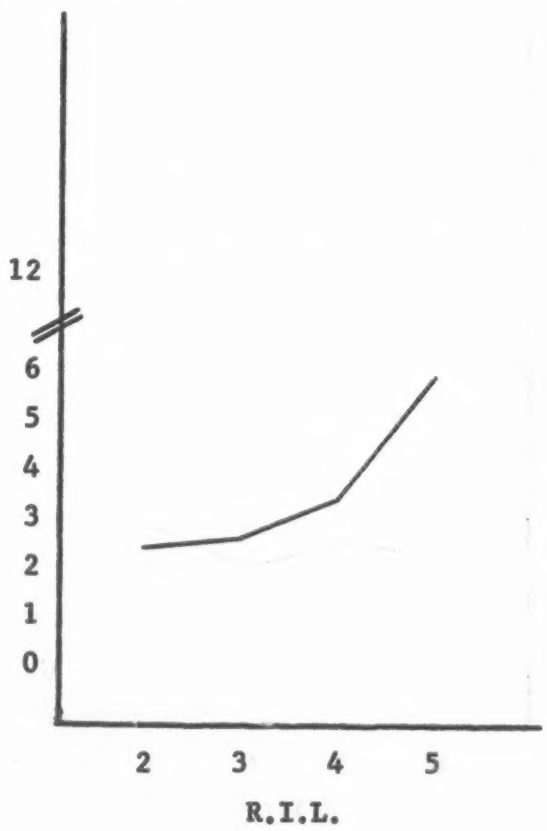
14.1 Recognizing functions of nouns



14.2 Recognizing functions of verbs



14.3 Recognizing functions of adjectives



14.4 Recognizing functions of adverbs

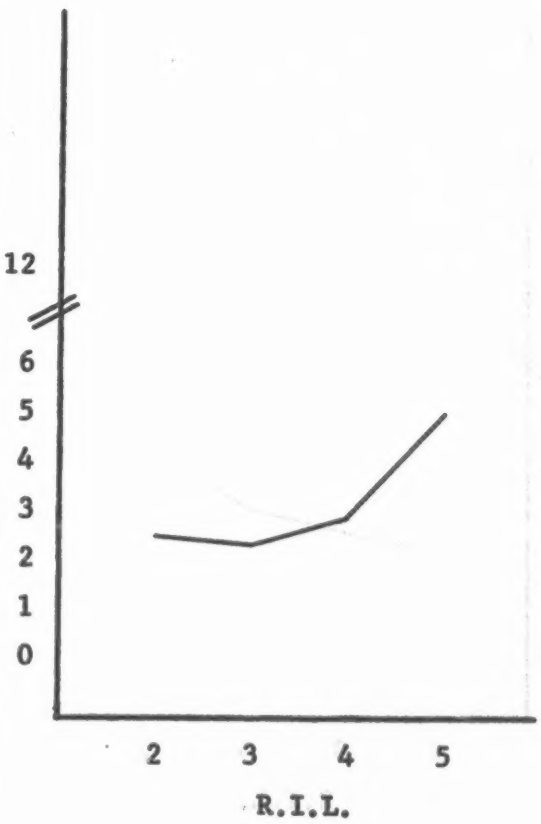
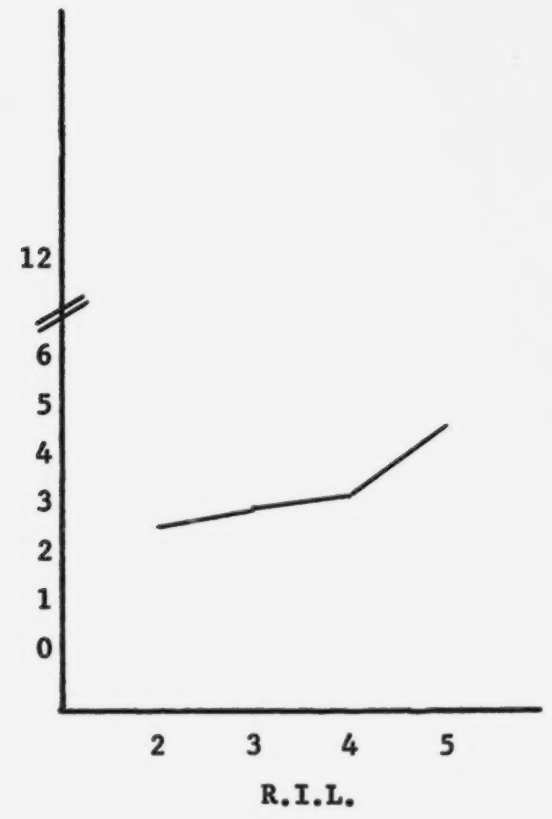
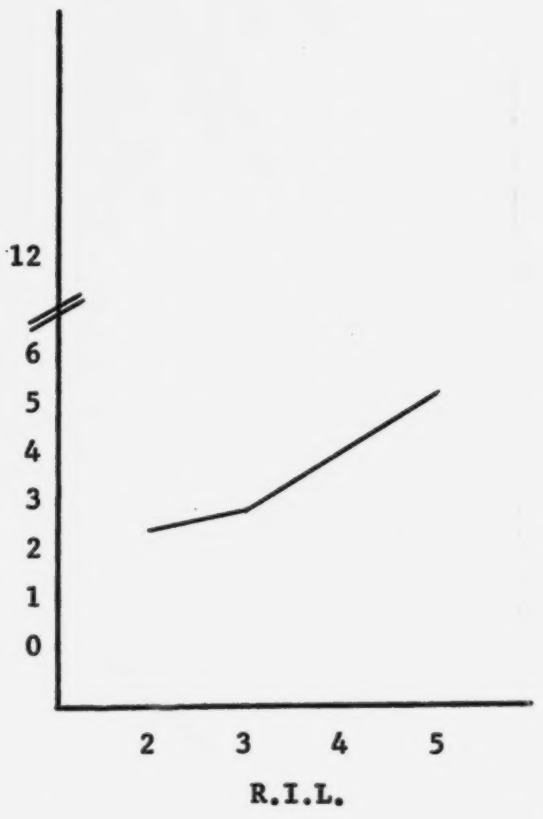


Figure 12-- Trends in Achievement of the Normal Group: Word Functions Skills

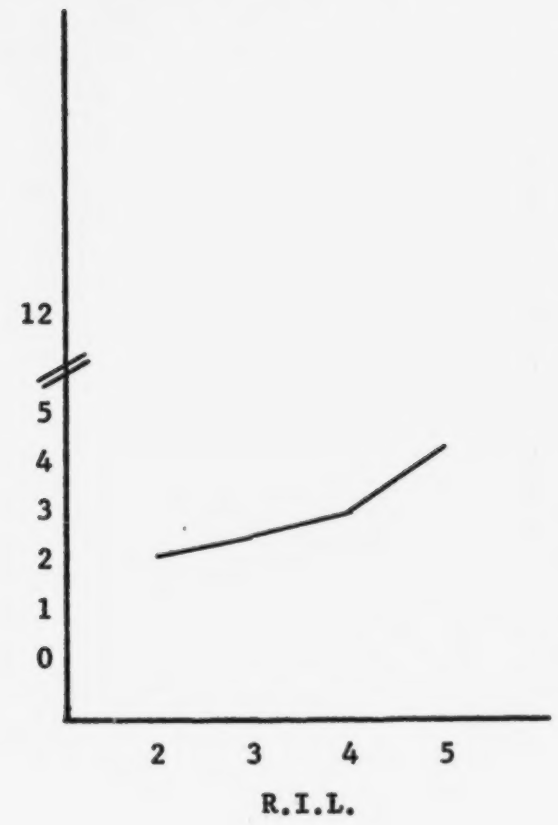
15.1 Specifying functions of nouns



15.2 Specifying functions of verbs



15.3 Specifying functions of adjectives



15.4 Specifying functions of adverbs

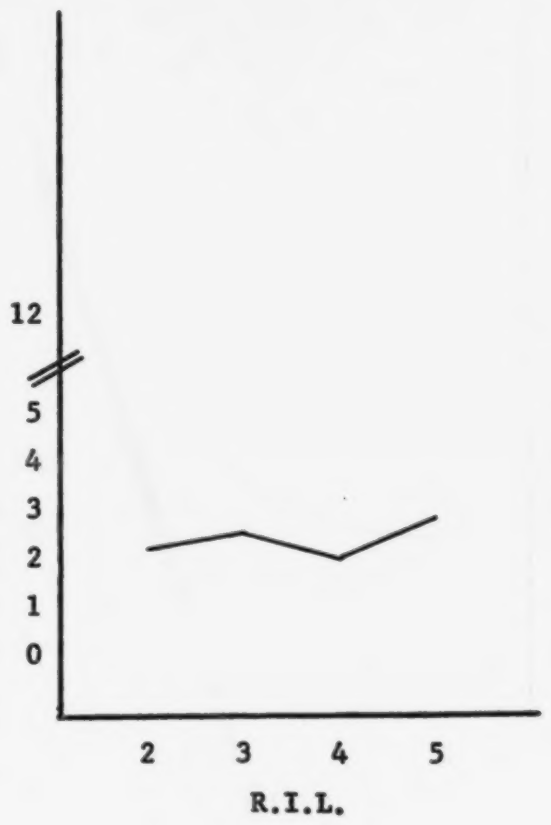
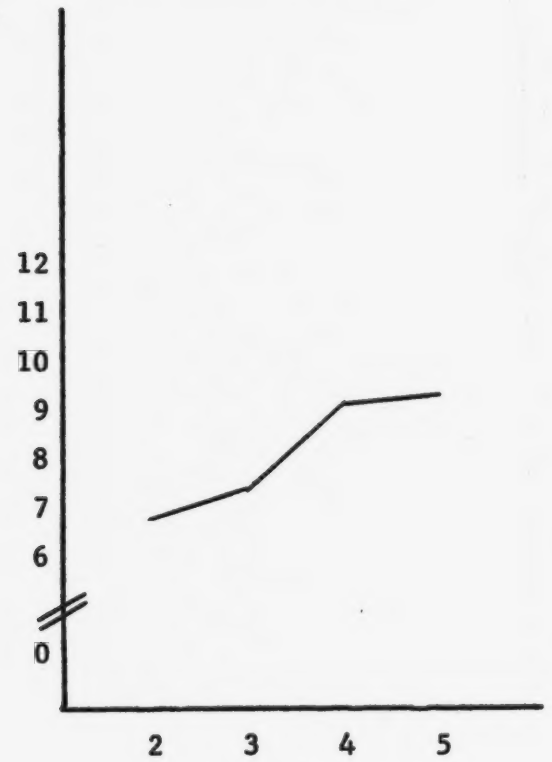
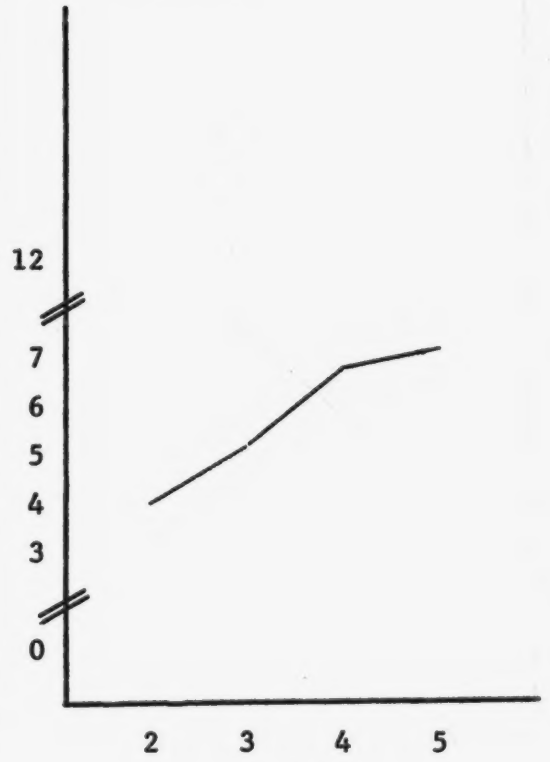


Figure 12 -- Trends in Achievement of the Normal Group: Word Functions Skills (Continued)

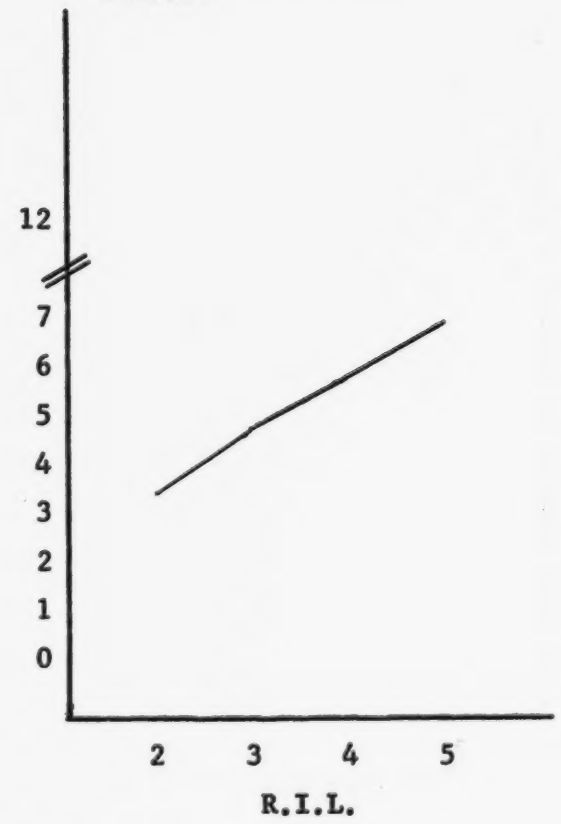
16.1 Identifying cause-effect relationships directly stated in sentences



17.3 Identifying main ideas directly stated in paragraphs



17.1 Identifying main ideas directly stated in stories



16.2 Identifying cause-effect relationships implied in sentences

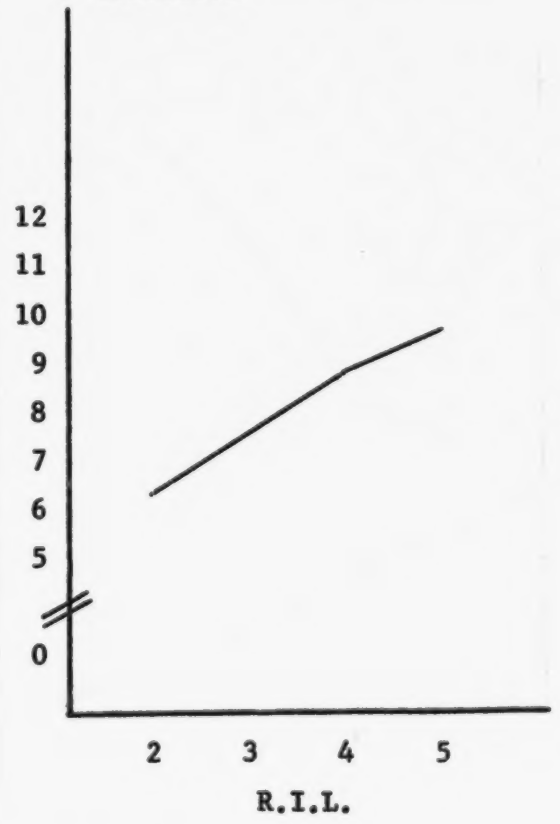
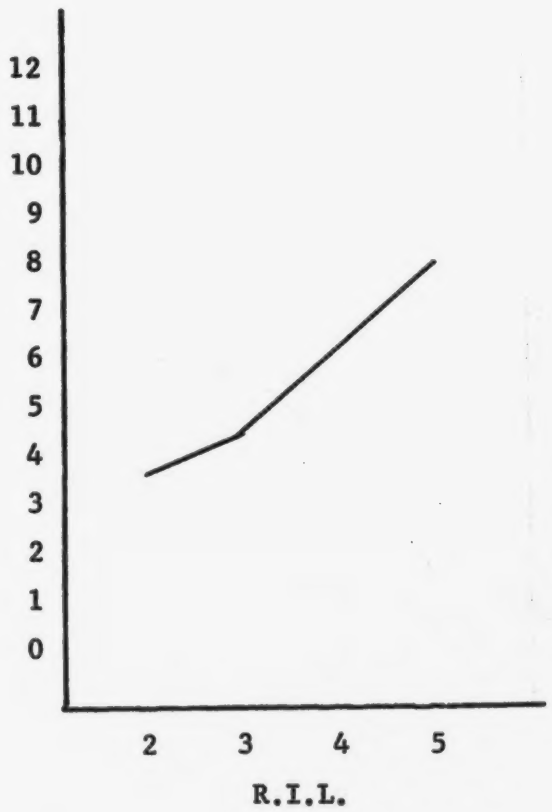
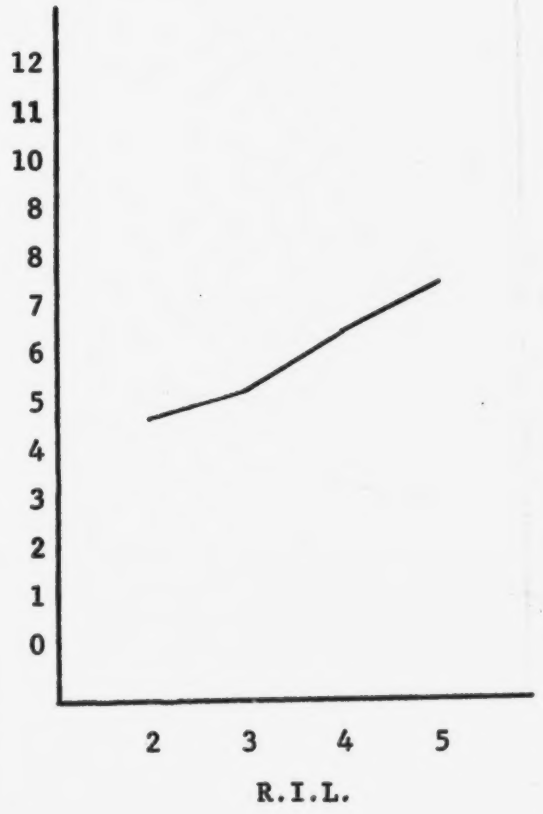


Figure 13 -- Trends in Achievement of the Normal Group: Comprehension Skills

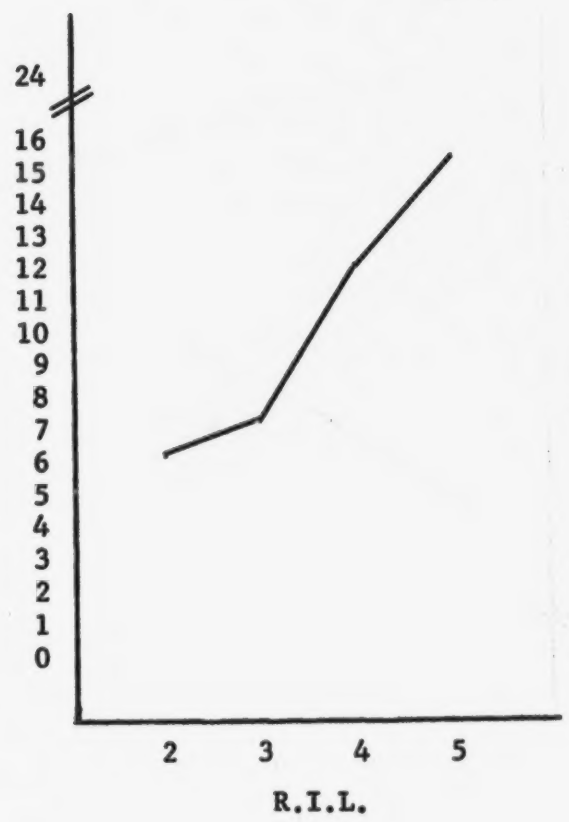
17.4 Identifying main ideas implied in paragraphs



17.2 Identifying main ideas implied in stories



17.5 Identifying details in Stories



19.1 Interpreting similes

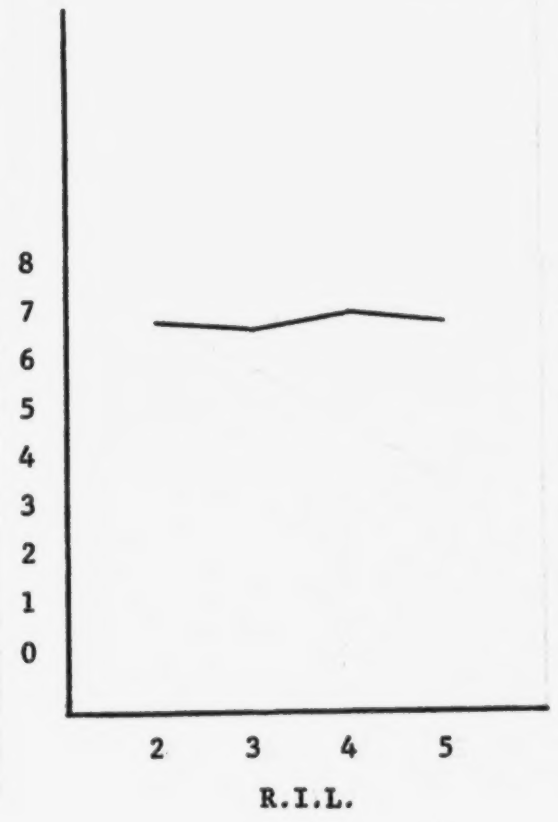
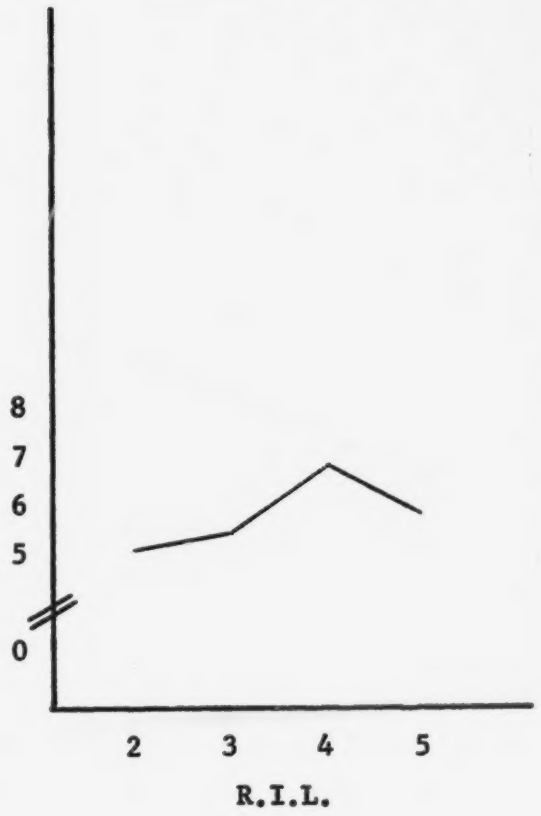
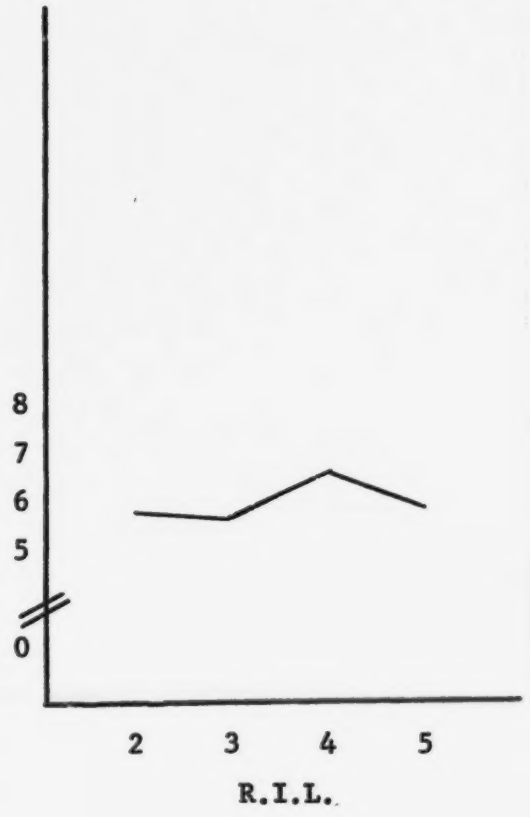


Figure 13-- Trends in Achievement of the Normal Group: Comprehension Skills (Continued)

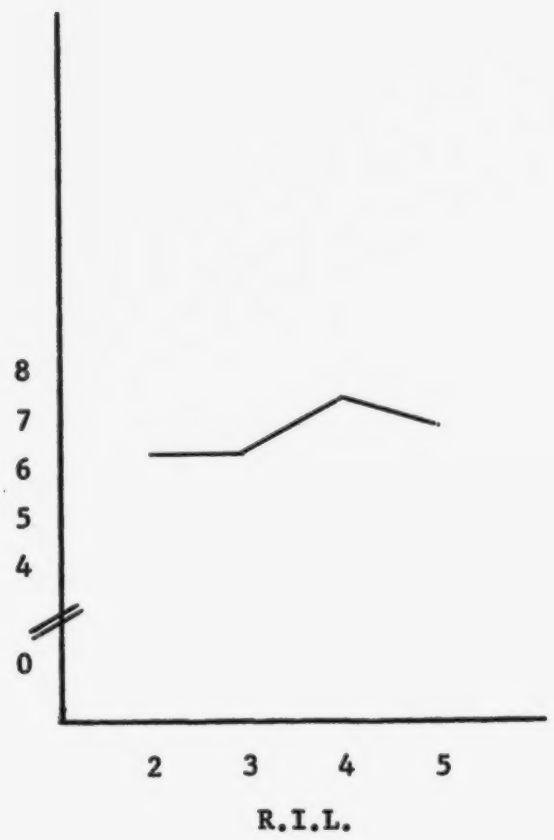
19.2 Interpreting idioms



19.3 Interpreting hyperboles



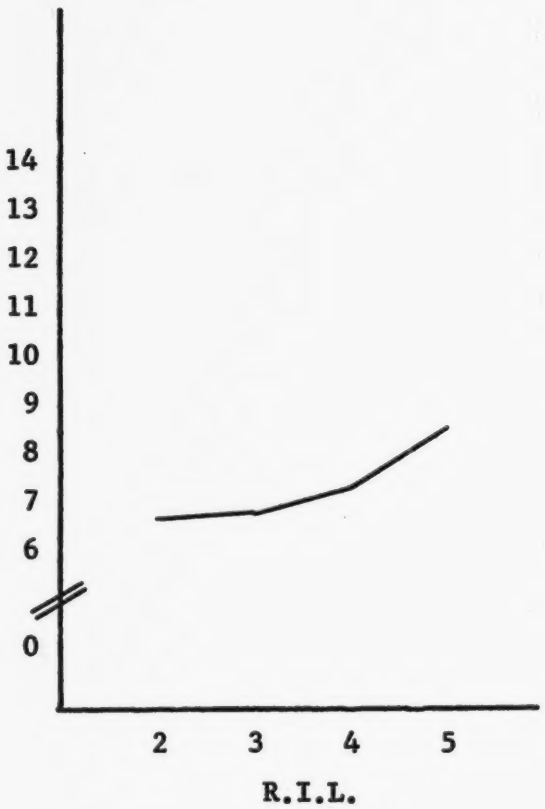
19.4 Interpreting personification



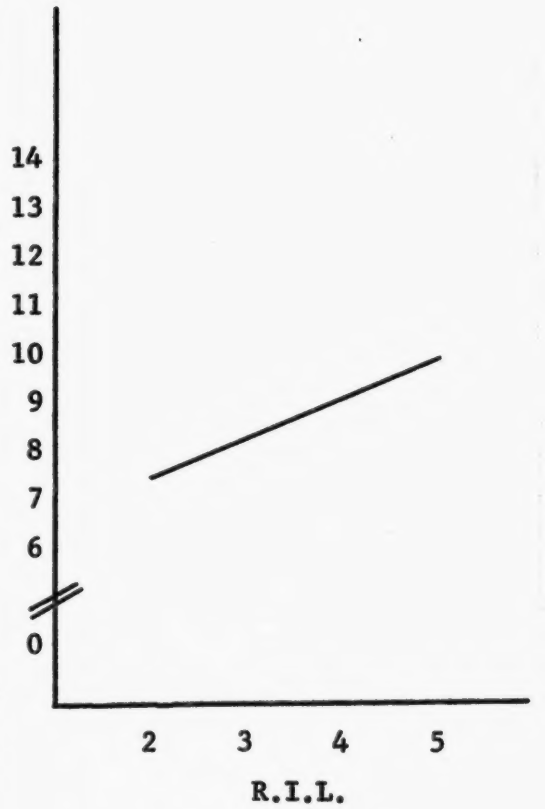
19.5 Interpreting metaphors

Figure 13 -- Trends in Achievement of the Normal Group: Comprehension Skills (Continued)

20.1 Predicting outcomes and actions



20.2 Discriminating between fact and fiction



20.3 Discriminating between fact and opinion

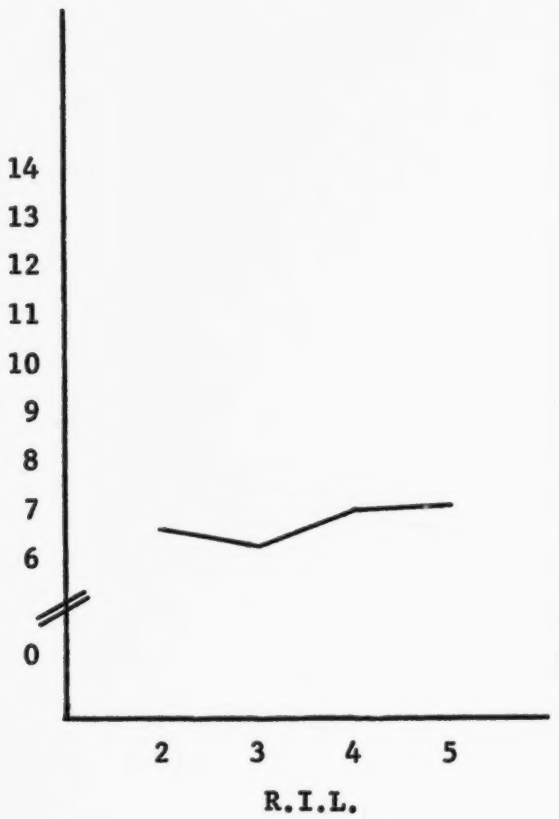


Figure 13 -- Trends in the Achievement of the Normal Group: Comprehension Skills (Continued)

Figures 14 through 19 -- Trends in Achievement of the Superior Group

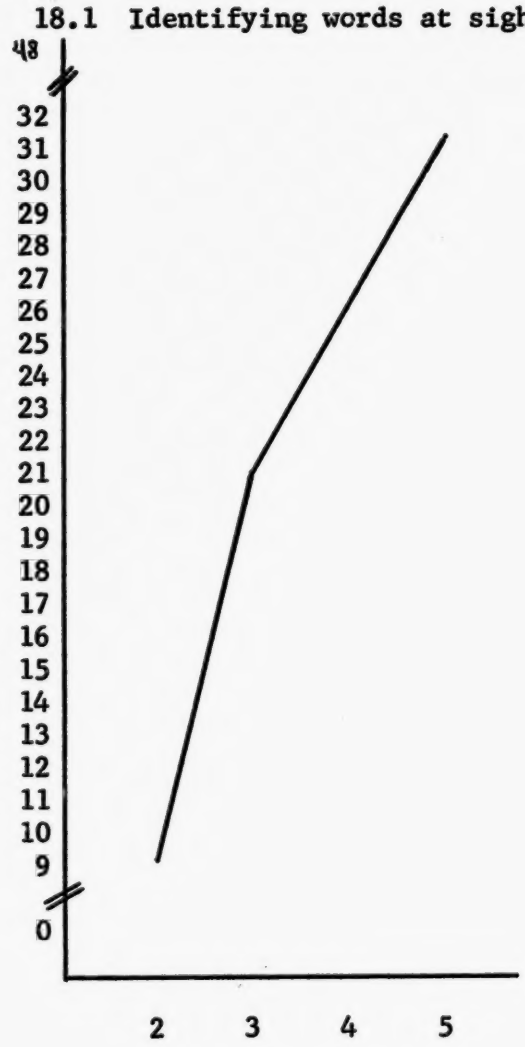
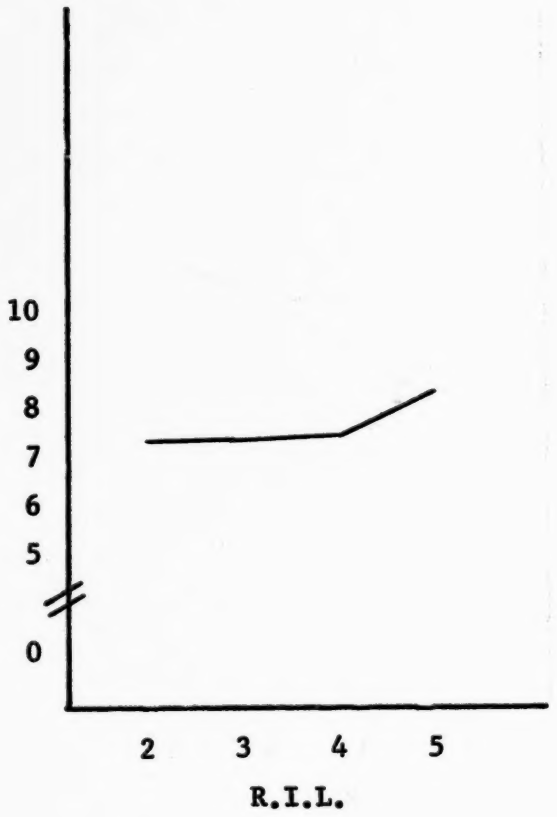
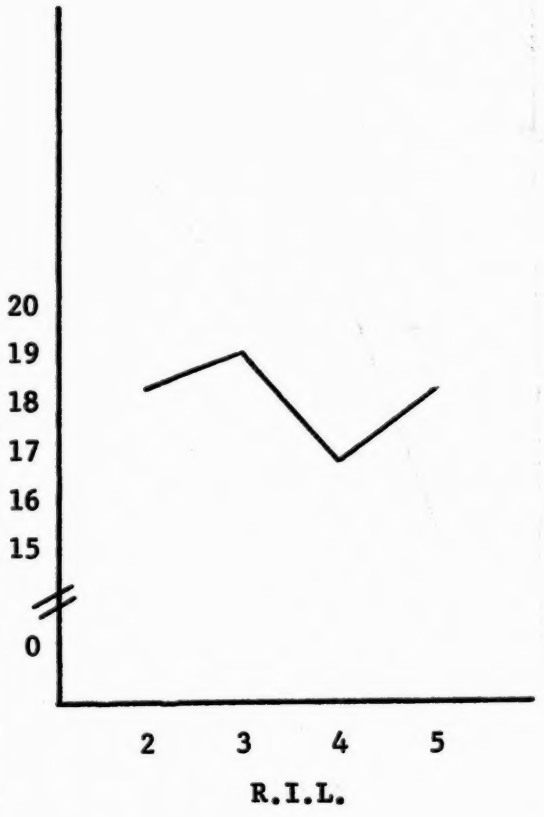


Figure 14 -- Trends in Achievement of the Superior Group: Identifying Words at Sight

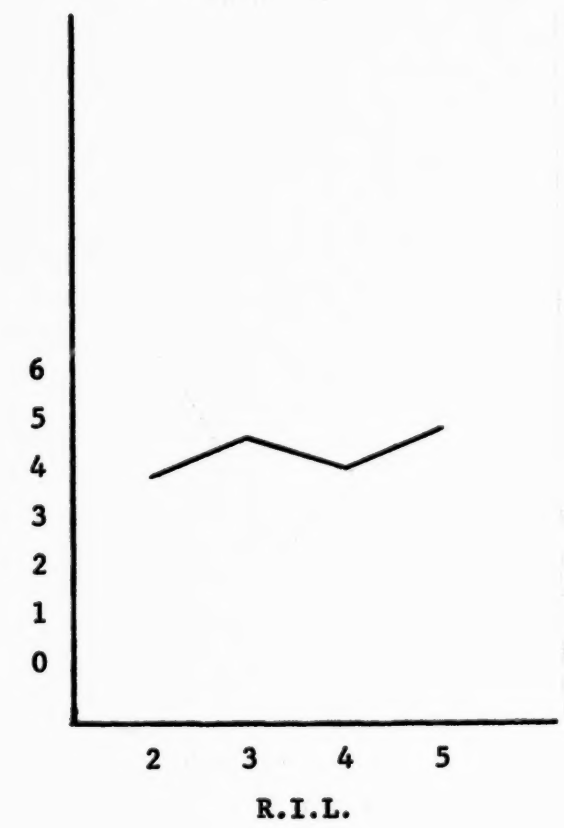
10.1 Associating vowel letters and sounds



10.2 Associating consonant letters and sounds



10.3 Associating consonant digraphs and sounds



10.8 Associating consonant blends and sounds

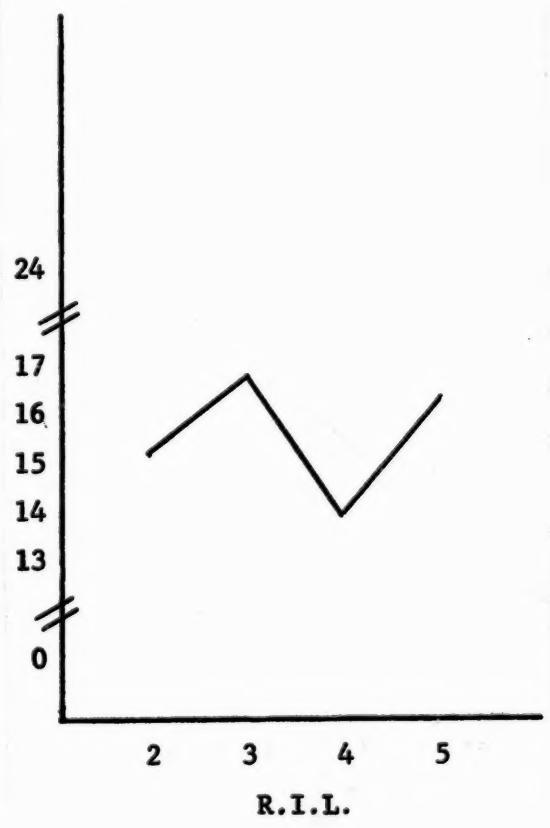
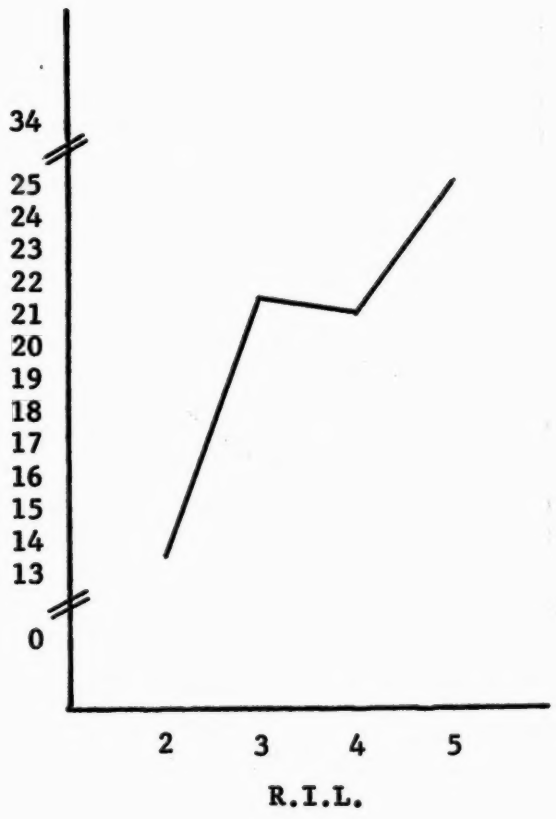
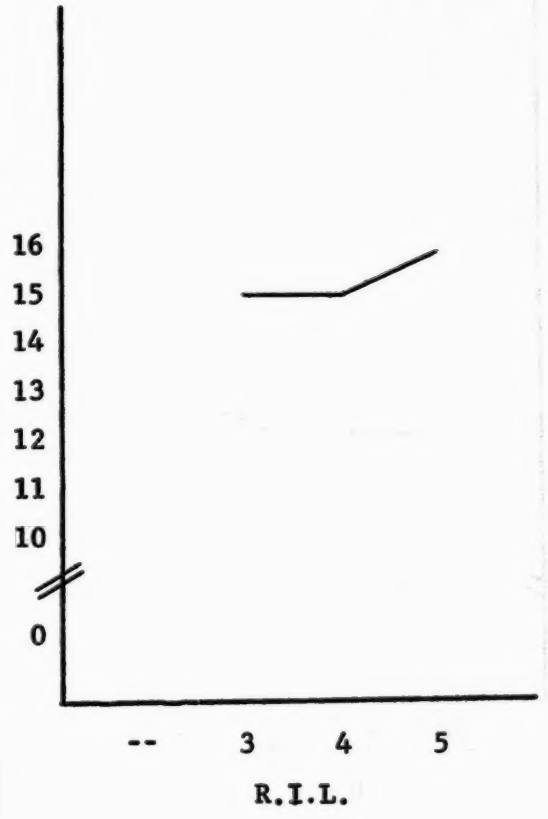


Figure 15 -- Trends in Achievement of the Superior Group: Phonetic Analysis Skills

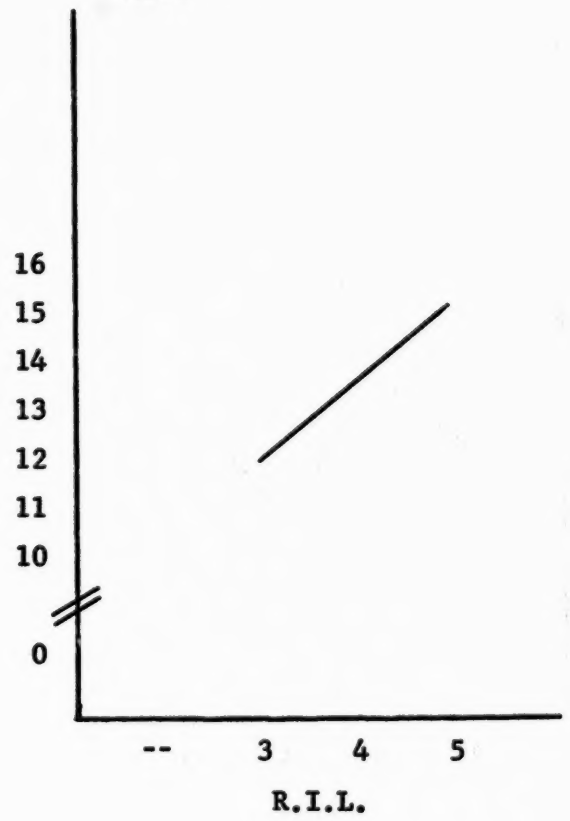
11.3 Using spelling patterns



13.1 Identifying syllables in orally and visually presented short words



12.1 Identifying syllables in visually presented short words



13.2 Identifying syllables in orally and visually presented long words

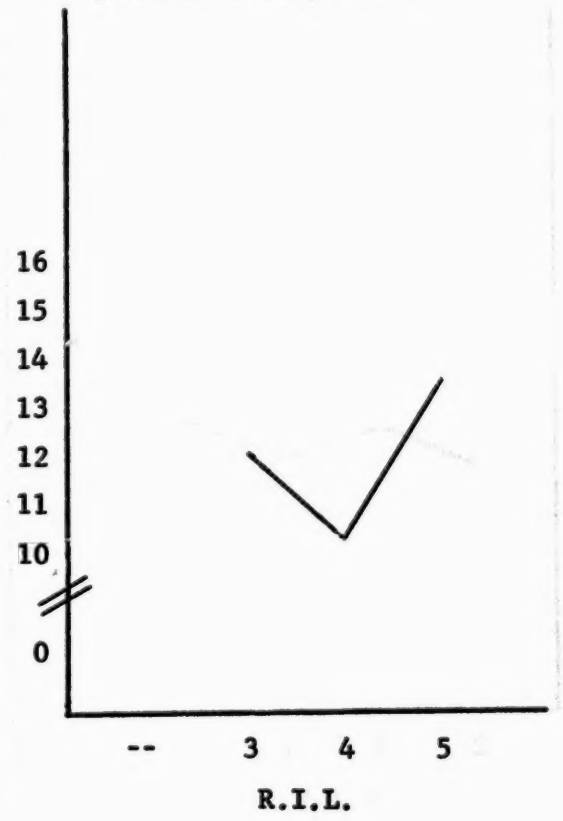


Figure 15 -- Trends in Achievement of the Superior Group: Phonetic Analysis Skills (Continued)

12.2 Identifying syllables in visually presented long words

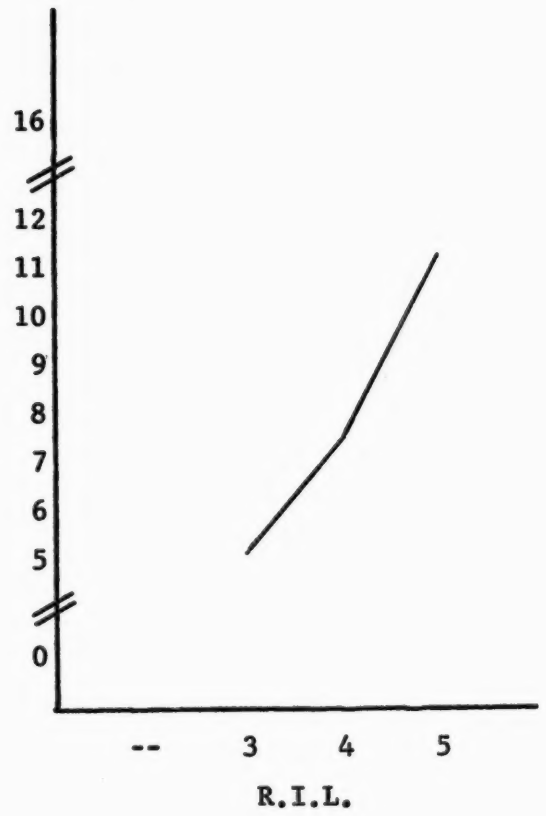
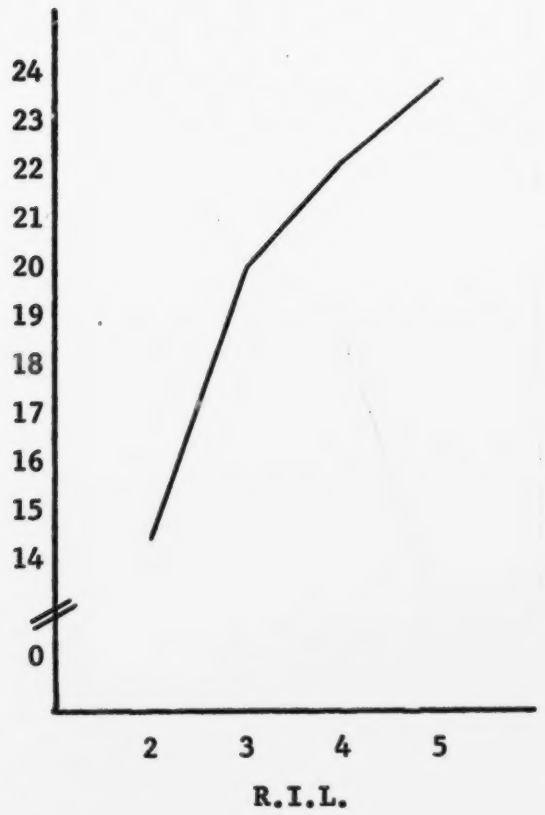
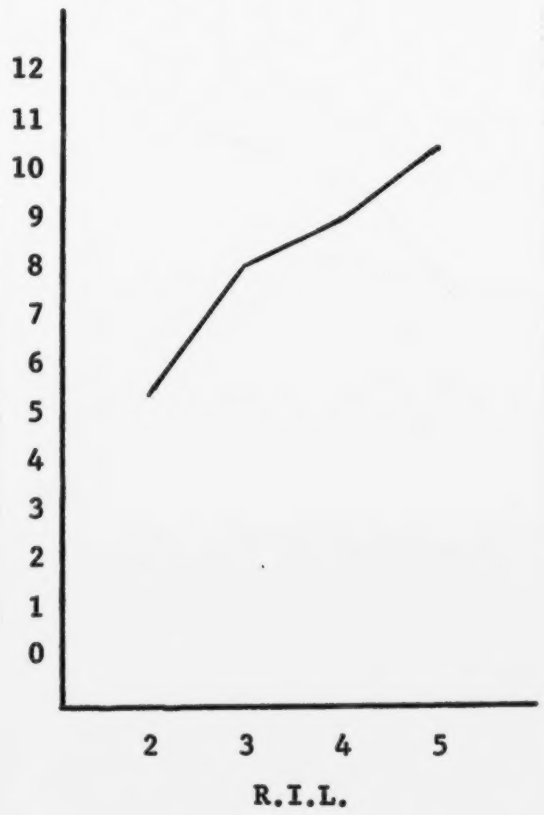


Figure 15 -- Trends in Achievement of the Superior Group: Phonetic Analysis Skills (Continued)

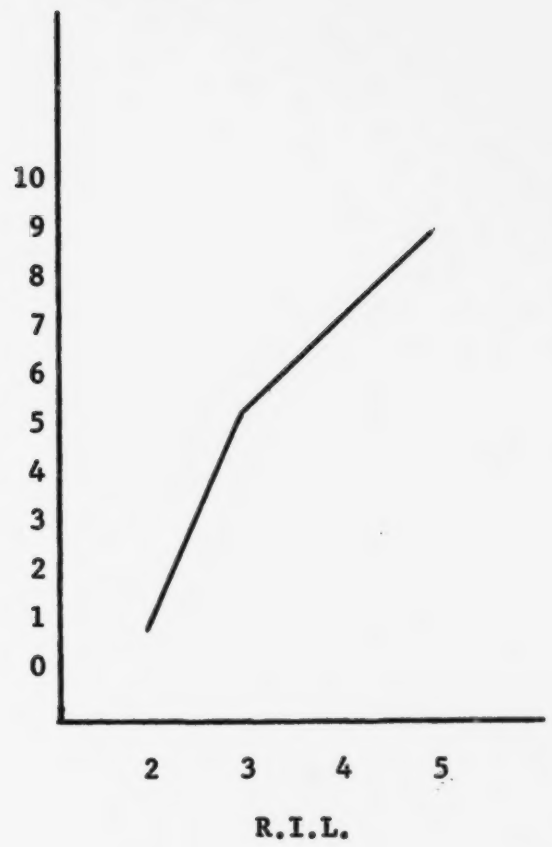
3.1 Identifying components of compounds



4.1 Identifying roots, endings, and suffixes



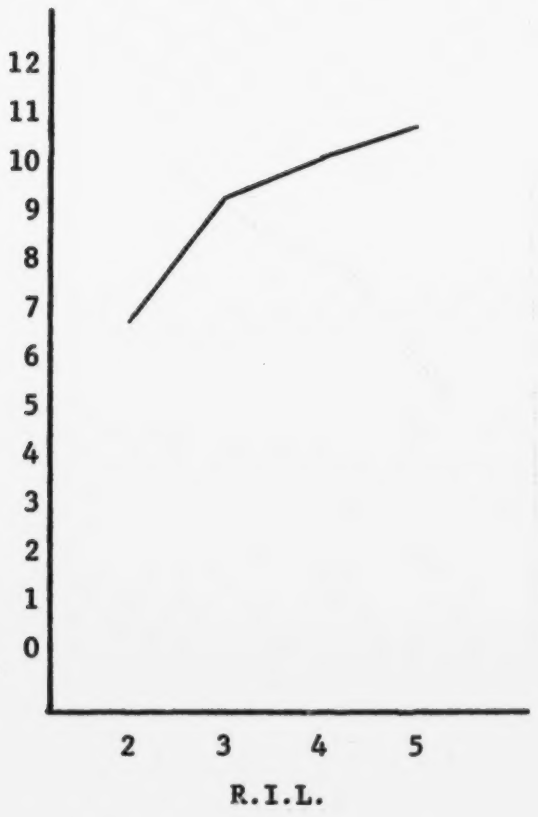
4.2 Identifying roots and prefixes



4.4 Identifying roots and multiple affixes

Figure 16 -- Trends in Achievement of the Superior Group: Structural Analysis Skills

2.1 Translating contractions



4.3 Locating roots by using root-change rules

1.1 Changing roots by using root-change rules

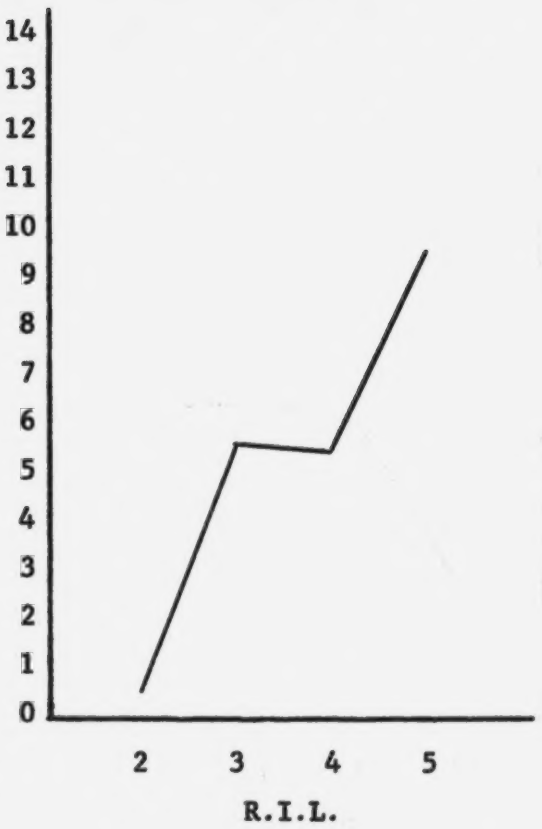
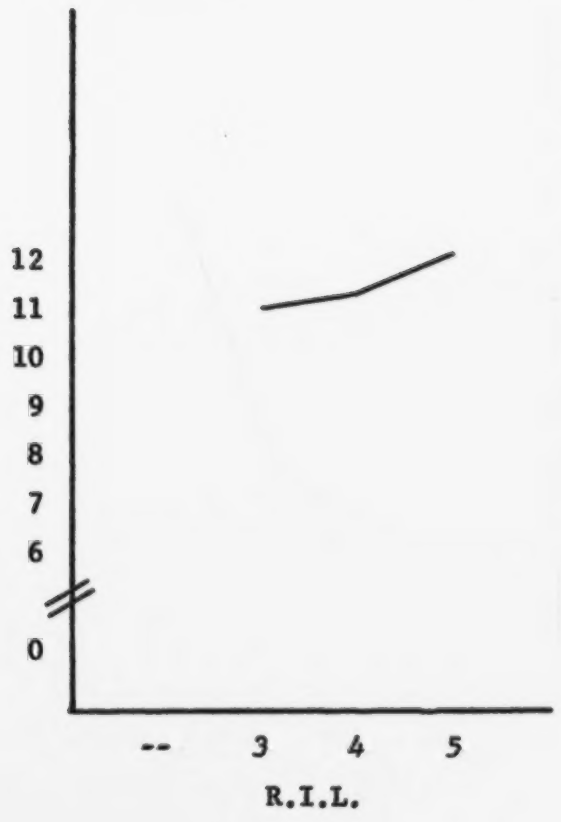
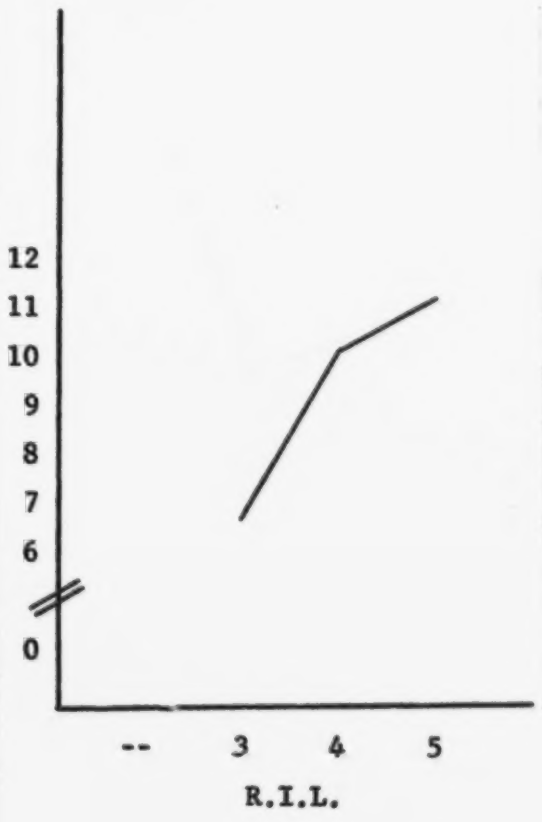


Figure 16 -- Trends in Achievement of the Superior Group: Structural Analysis Skills (Continued)

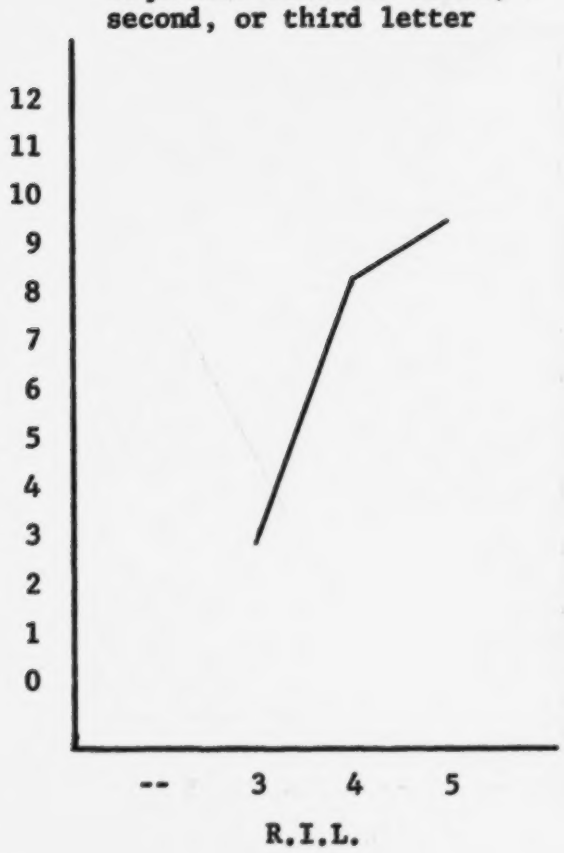
5.1 Identifying alphabetical sequences based on first letter



5.2 Identifying alphabetical sequences based on third letter



5.3 Identifying alphabetical sequences based on first, second, or third letter



6.3 Using dictionary guide words

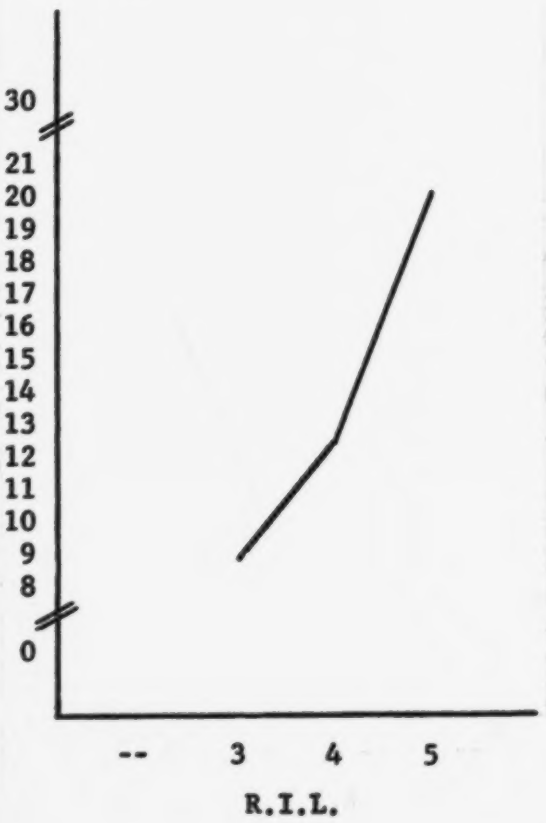
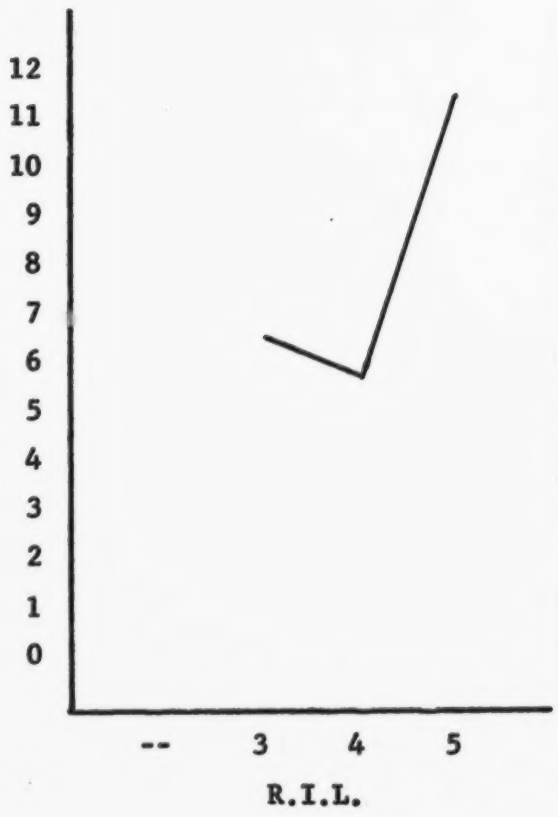


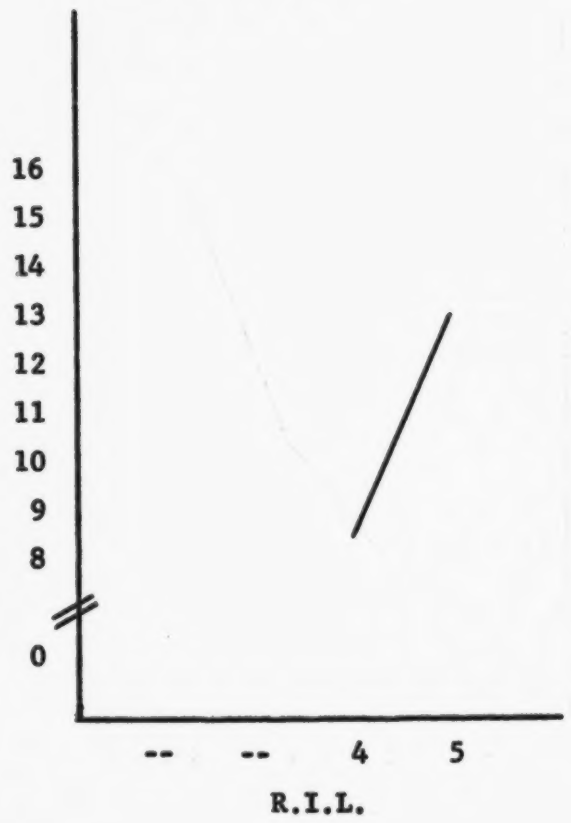
Figure 17 -- Trends in Achievement of the Superior Group: Dictionary Skills

7.1 Finding definitions of single entry words



7.2 Finding definitions of multiple entry words

8.1 Selecting definitions of single entry words



8.2 Selecting definitions of multiple entry words

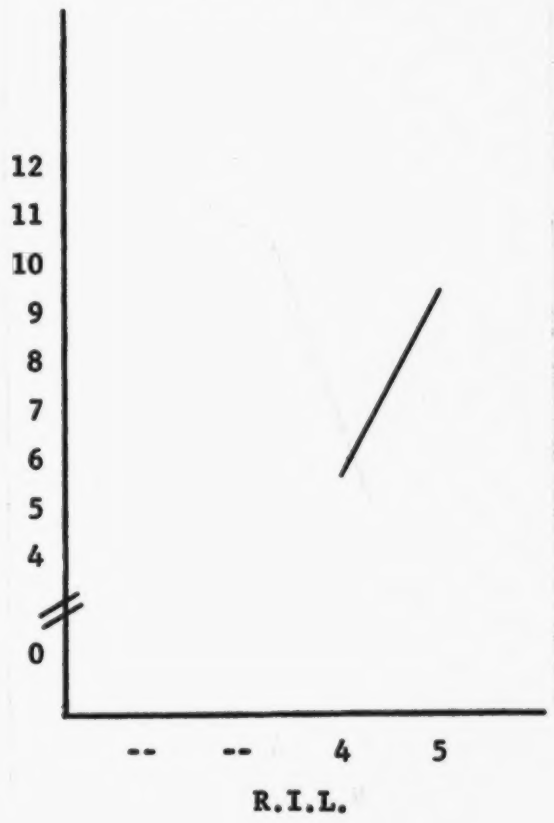
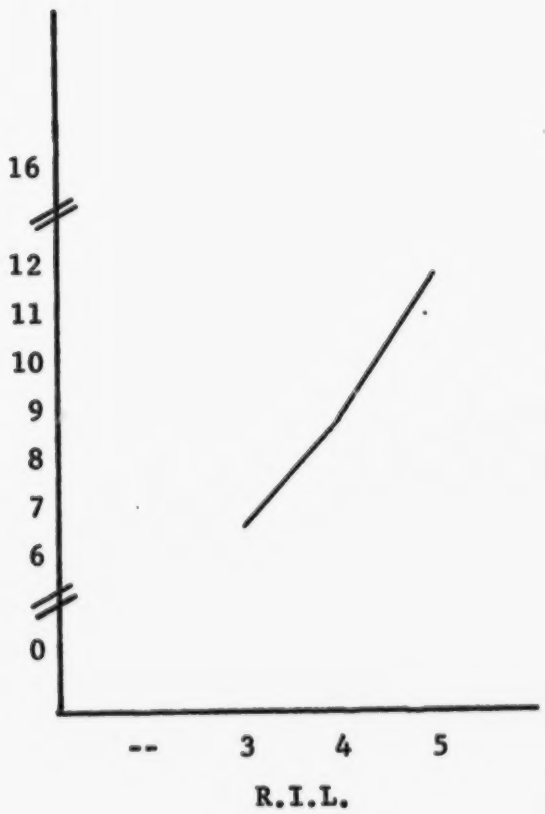


Figure 17 -- Trends in Achievement of the Superior Group: Dictionary Skills (Continued)

9.1 Interpreting single pronunciation symbols



9.2 Interpreting multiple pronunciation symbols

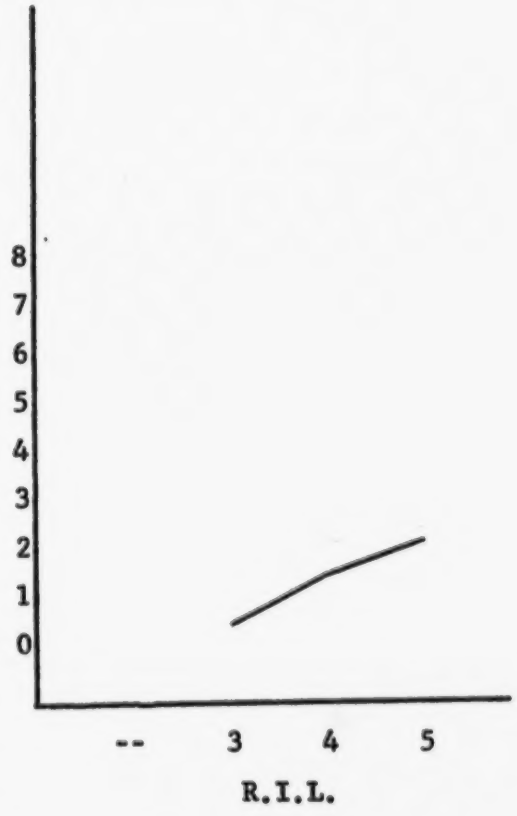
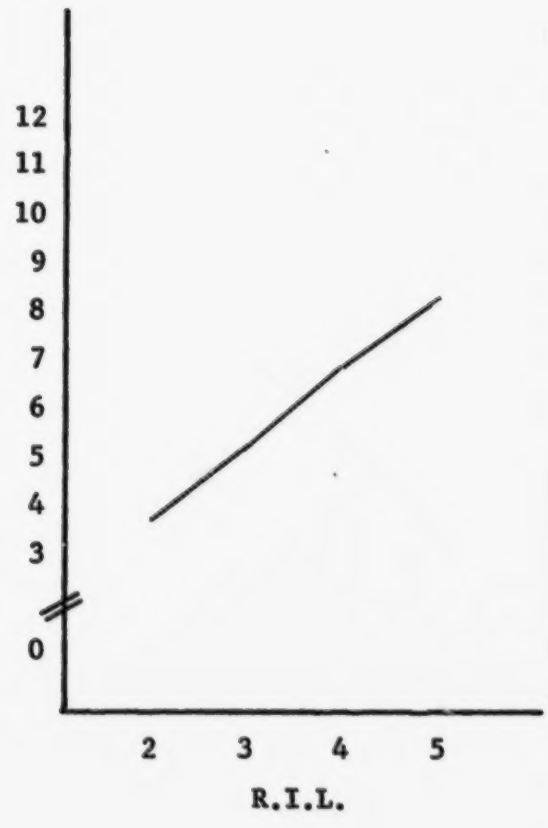
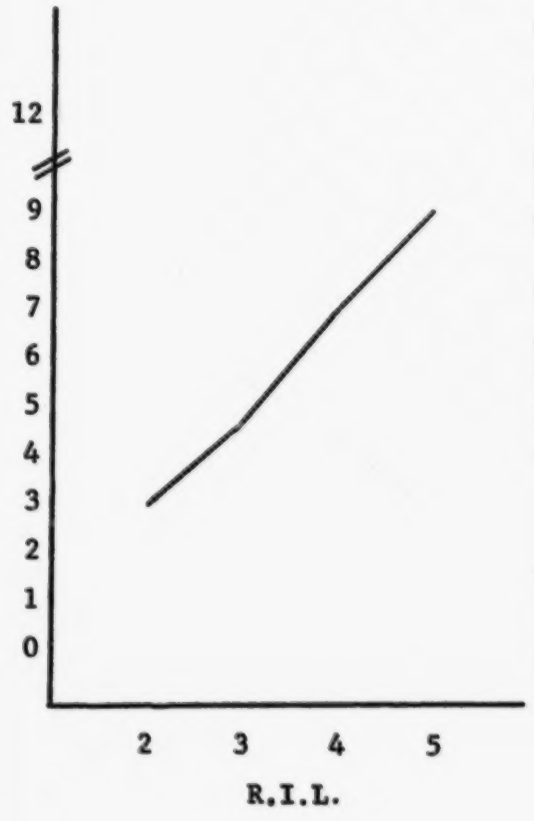


Figure 17 -- Trends in Achievement of the Superior Group: Dictionary Skills (Continued)

14.1 Recognizing functions of nouns



14.2 Recognizing functions of verbs



14.3 Recognizing functions of adjectives

14.4 Recognizing functions of adverbs

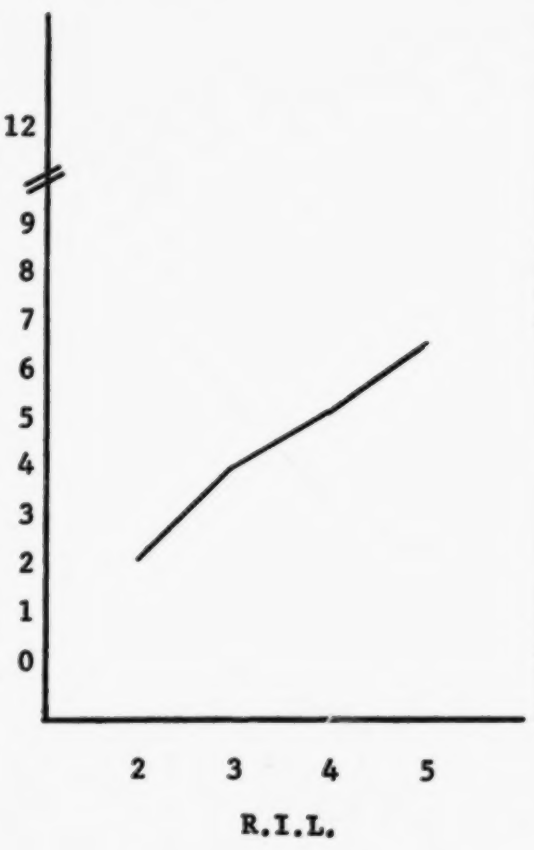
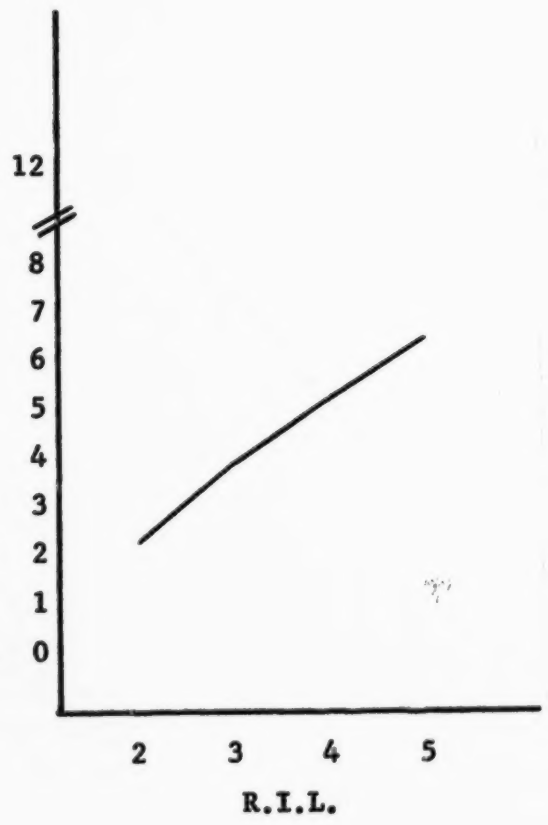
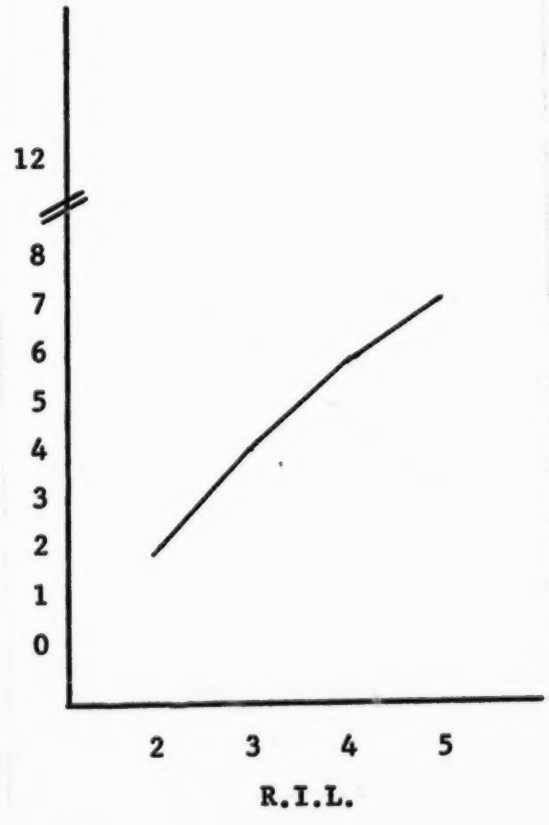


Figure 18 -- Trends in Achievement of the Superior Group: Word Functions Skills

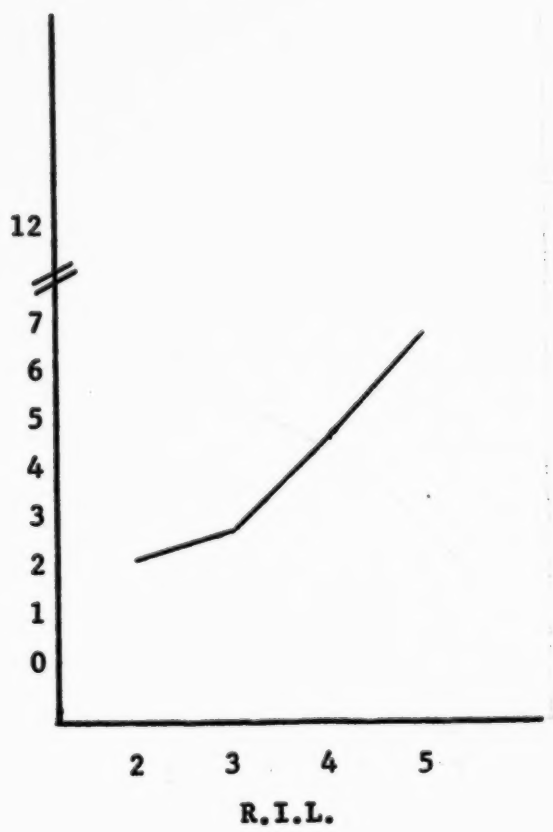
15.1 Specifying functions of nouns



15.2 Specifying functions of verbs



15.3 Specifying functions of adjectives



15.4 Specifying functions of adverbs

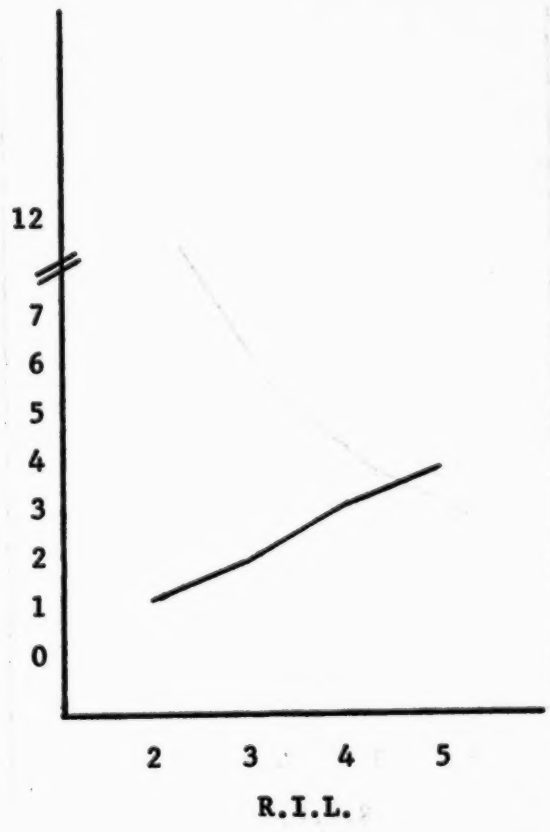
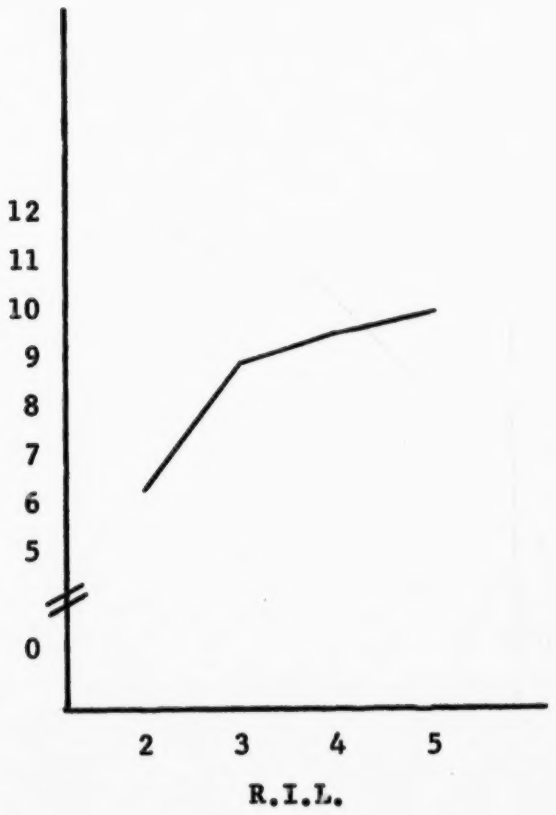
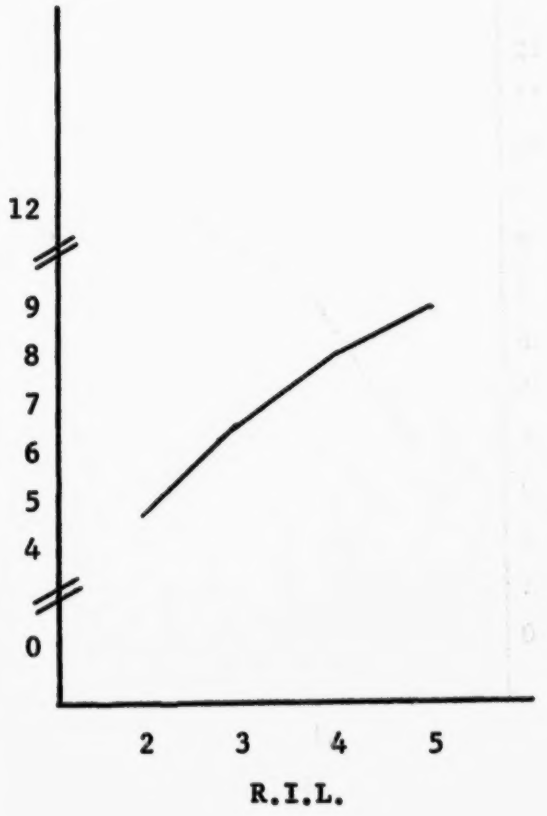


Figure 18 -- Trends in Achievement of the Superior Group: Word Functions Skills (Continued)

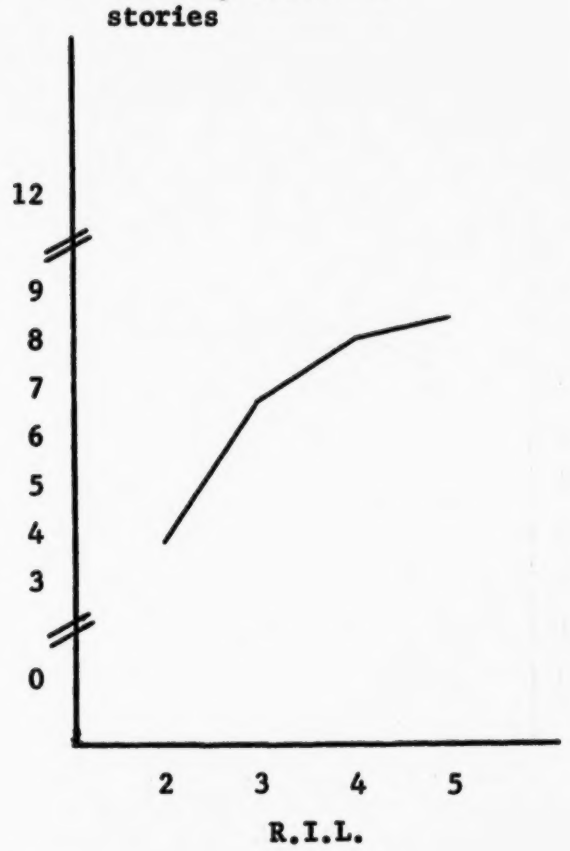
16.1 Identifying cause-effect relationships directly stated in sentences



17.3 Identifying main ideas directly stated in paragraphs



17.1 Identifying main ideas directly stated in stories



16.2 Identifying cause-effect relationships implied in sentences

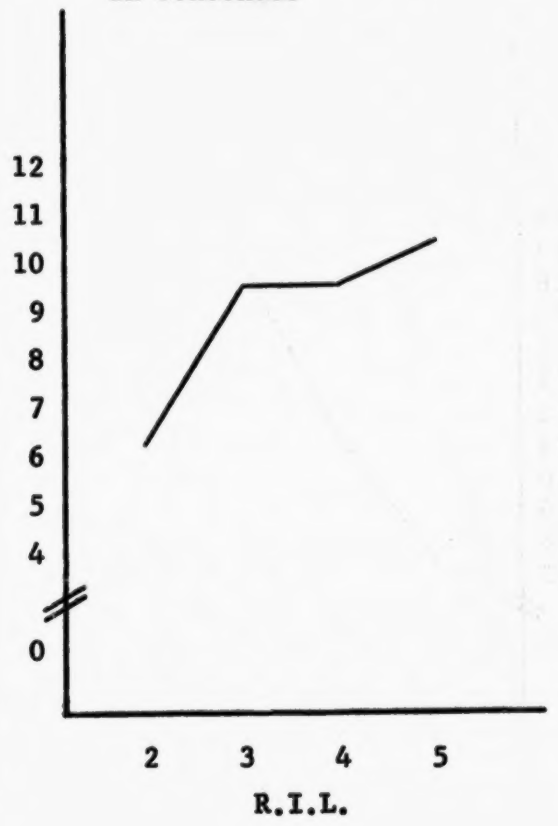
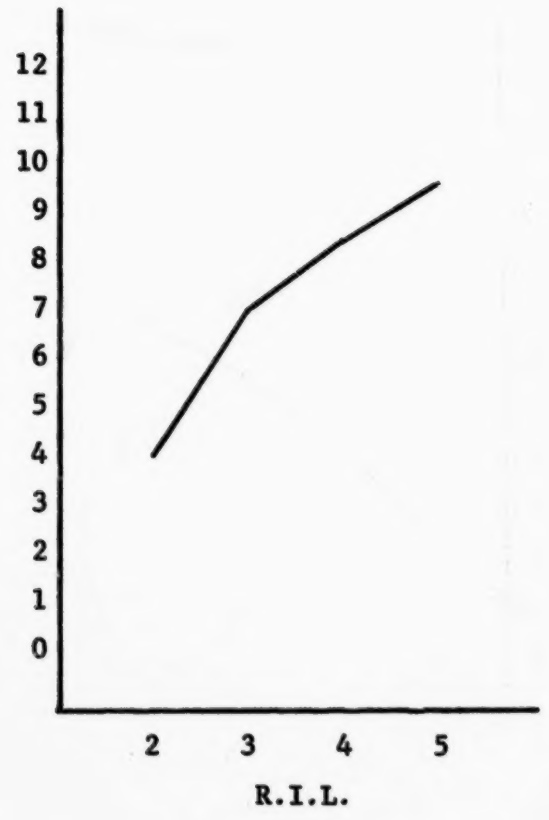
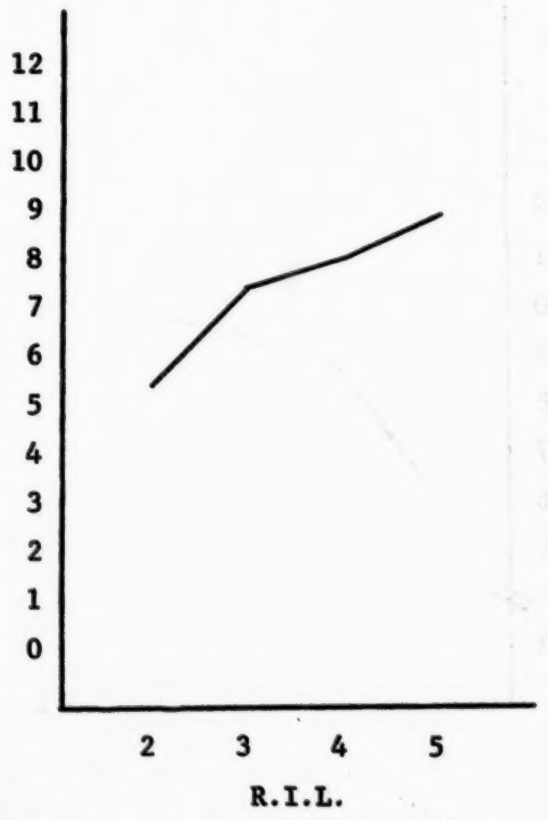


Figure 19 -- Trends in Achievement of the Superior Group: Comprehension Skills

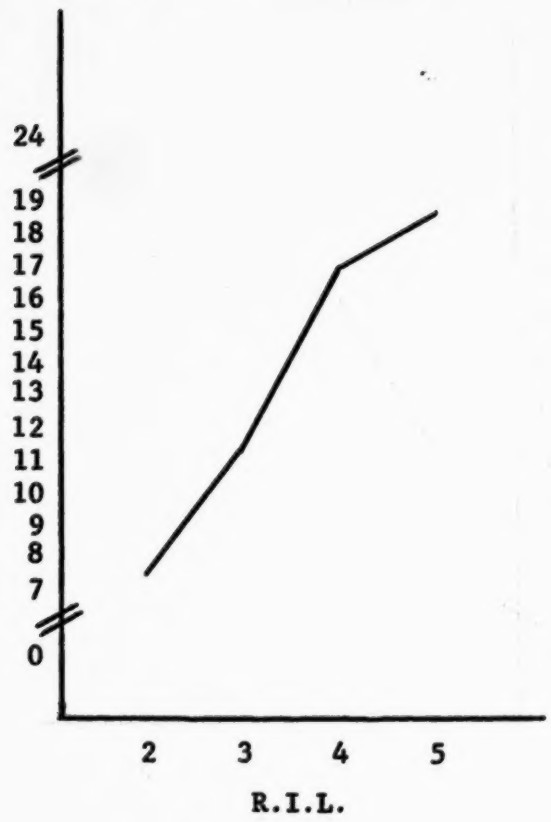
17.4 Identifying main ideas implied in paragraphs



17.2 Identifying main ideas implied in stories



17.5 Identifying details in stories



19.1 Interpreting similes

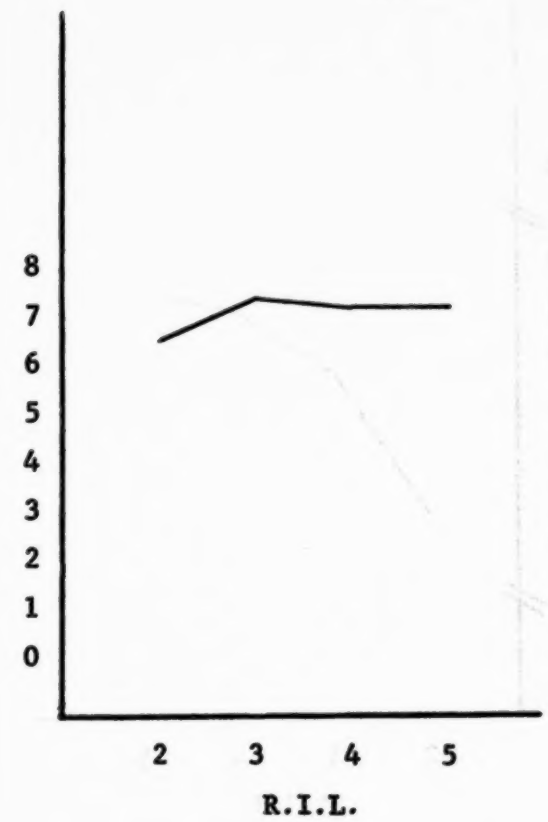
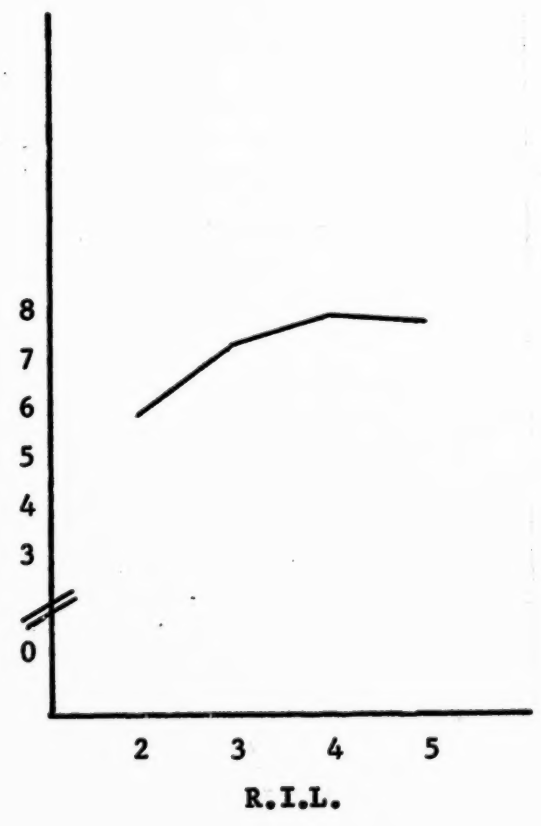
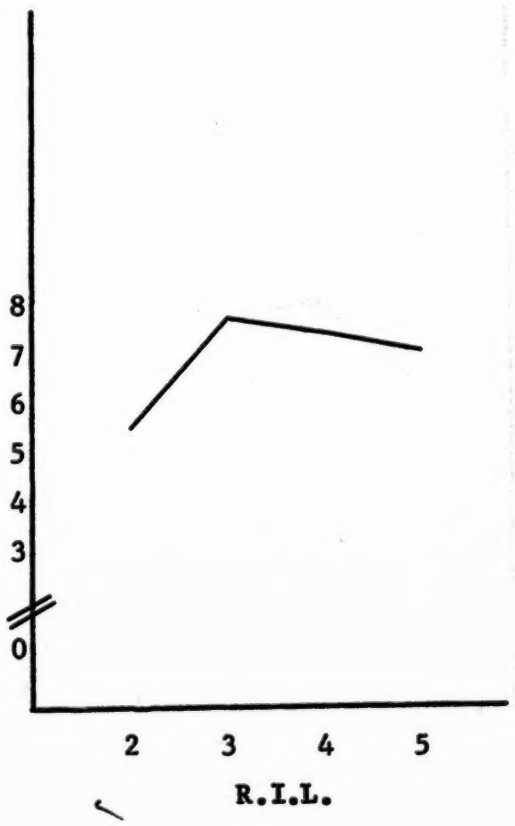


Figure 19 -- Trends in Achievement of the Superior Group: Comprehension Skills (Continued)

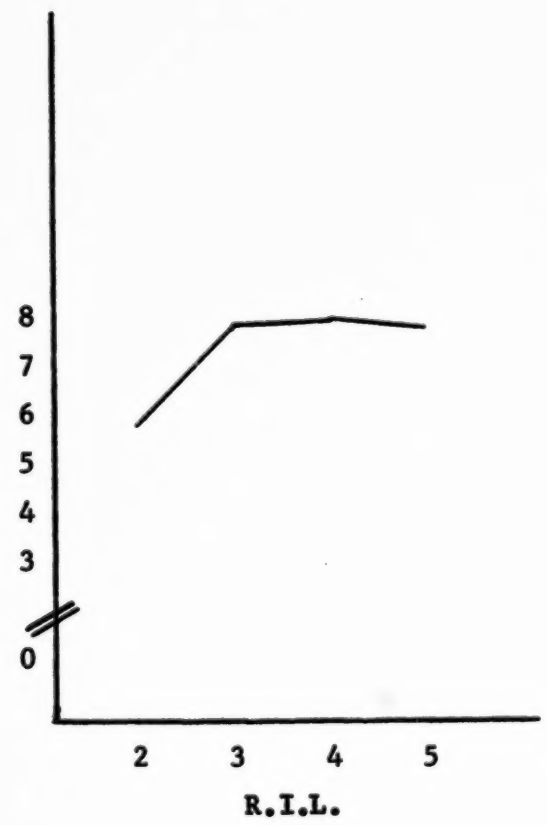
19.2 Interpreting idioms



19.3 Interpreting hyperboles



19.4 Interpreting personification



19.5 Interpreting metaphors

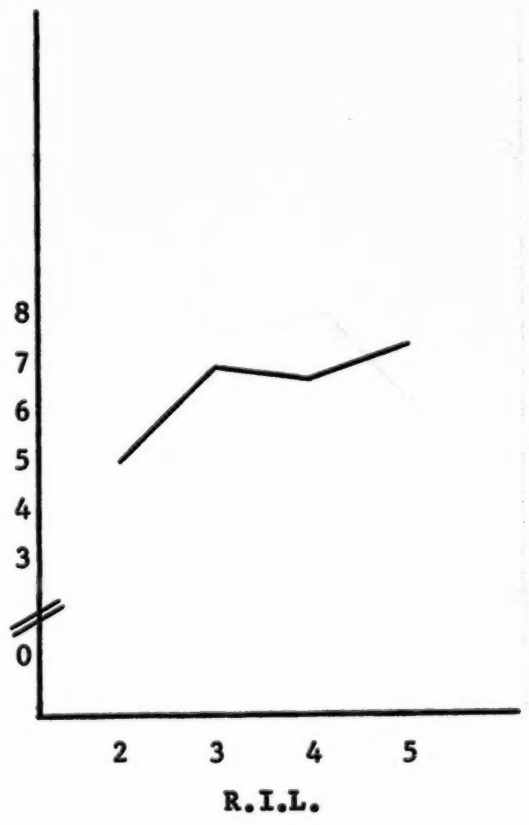
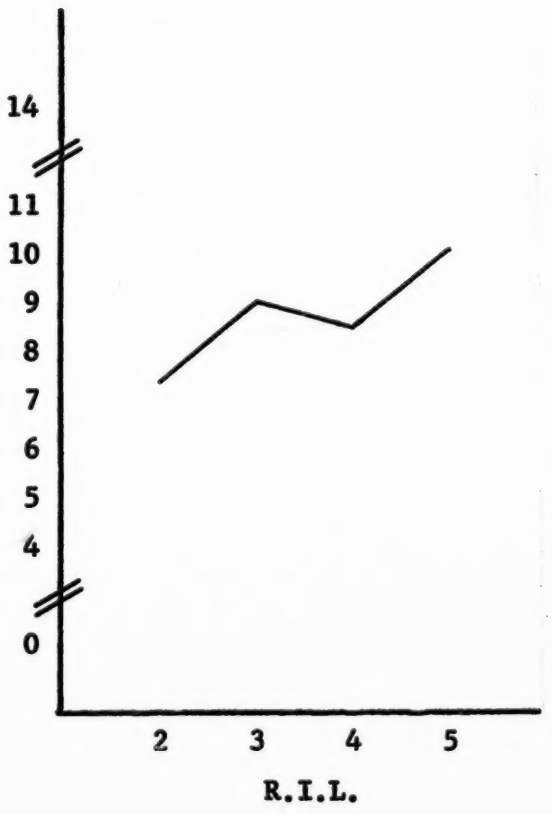
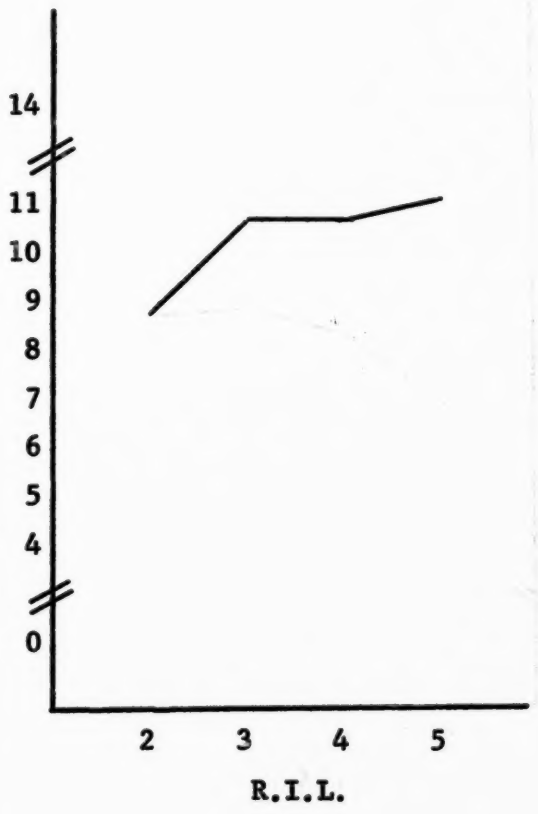


Figure 19 -- Trends in Achievement of the Superior Group: Comprehension Skills (Continued)

20.1 Predicting outcomes and actions



20.2 Discriminating between fact and fiction



20.3 Discriminating between fact and opinion

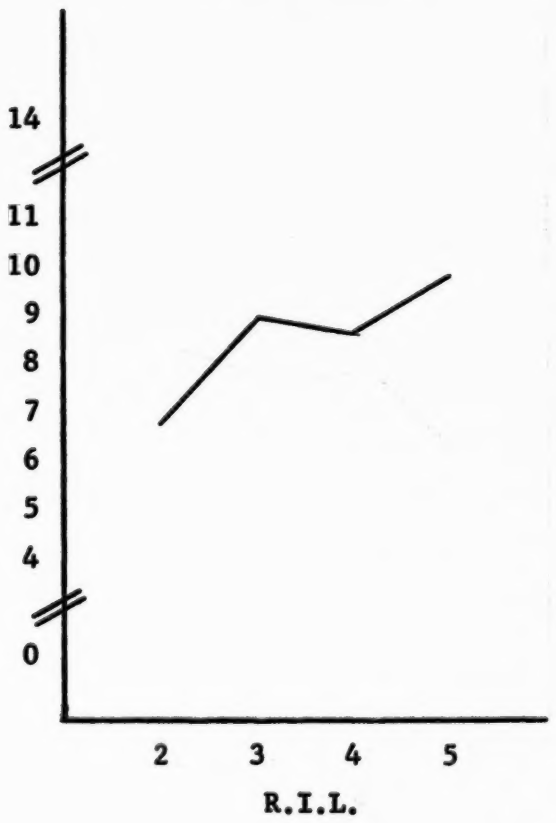


Figure 19 -- Trends in Achievement of the Superior Group: Comprehension Skills (Continued)

CHAPTER 6

INTELLECTUALLY RETARDED AND NORMAL GROUPS' ACHIEVEMENT IN THE BASAL READING SKILLS

This chapter contains information pertaining to the fourth research objective for the study: to compare intellectually retarded and normal groups' achievement in the basal reading skills. The specific research questions referred to retarded and normal groups who are equated on MA level and an independent measure of general reading achievement level and who are taught at the same reading instructional levels.

a. Level of Acquisition in the Basal Reading Skills. -- At the primary and intermediate reading instructional levels, do retarded and normal groups differ in level of acquisition in the basal reading skills at the beginning of a 7-month instructional period?

b. Rate of Acquisition in the Basal Reading Skills. -- At the primary and intermediate reading instructional levels, do retarded and normal groups differ in rate of acquisition in the basal reading skills during a 7-month instructional period?

Chapters 1 and 2 include descriptions of related research and the procedures. Major points are recapitulated briefly below.

Jones (1919-1920) and Merrill (1924) conducted earlier studies in which retarded subjects were contrasted with more intelligent subjects who had similar MA's. In later studies, Bleismer (1952) compared retarded and intellectually superior subjects; Dunn (1954) and Shotick (1960) studied retarded and normal subjects. In addition to controlling MA, Shotick equated his subjects on reading grade placement on the Stanford Achievement Test. Davidson (1931) compared retarded, normal, and superior subjects' progress during a 1 1/2 month instructional program in reading. This phase of the present investigation was an extension of the earlier work on retarded and normal subjects' reading achievement.

Subjects were 108 retarded pupils and 108 normal pupils. Each group contained 27 subjects at reading instructional levels 2, 3, 4, and 5, respectively. For the purposes of the analyses of level and rate of acquisition, pupils at the four reading instructional levels were grouped into two levels: primary and intermediate. The retarded and normal subjects were equated on MA level and an independent measure of general reading achievement level, and the frequencies of males and females did not differ significantly.

The subjects were taught in the Scott, Foresman New Basic Readers program during the school year. They were administered 20 tests to assess 50 basal reading skills taught in this basal reading program. Tests #1 - #17 measuring 41 basal reading skills were administered in the fall and again seven months later in the spring. Tests #19 and #20 measuring eight basal reading skills were administered one time; in the spring. Test #18 measuring one basal reading skill was administered only in the fall.

The data for the first research question, level of acquisition, were subjects' scores on the fall administration of tests #1 - #17 and subjects' scores on tests #18, #19, and #20. Retarded and normal subjects' scores were compared at the primary level and also at the intermediate level; *t* tests were used for the statistical analyses.

The data for the second research question, rate of acquisition, were the subjects' scores on the fall and spring administrations of tests administered twice, tests #1 - #17. The subjects were compared separately at the primary and intermediate levels. The data were processed in a two-factor analysis of variance model, one factor being repeated measurements; specifically, the Lindquist (1953) Type I design was used.

The format for the present chapter is the following. Information pertinent to the two research questions, level of acquisition and rate of acquisition, is located in separate sections. In these sections, information is presented about basal reading skills in the six categories: identifying words at sight, phonetic analysis skills, structural analysis skills, dictionary skills, word functions skills, and

comprehension skills. The information consists of descriptions of relationships specific to each skill in the category. A third section consists of a summary of levels and rates of acquisition for the six sets of skills.

The evidence presented in the text is restricted to references to relationships indicated by the results of the statistical analyses. Detailed statistical data are presented in Appendix S ; these data encompass results of statistical tests relevant to the groups' levels and rates of acquisition.

Level of Acquisition

Identifying Words at Sight

Table 30 consists of relationships indicated by the statistical analyses of scores on identifying words at sight. At both the primary and intermediate levels, the retarded and normal groups did not differ in initial level of acquisition.

Table 30

Summary: Level of Acquisition of the Retarded and Normal Groups -- Identifying Words at Sight

Basal reading skill	R.I.L.	
	Primary	Intermediate
18.1 Identifying words at sight	N=R	N=R

Phonetic Analysis Skills

Nine phonetic analysis skills were examined. Table 31 contains a summary of relationships between the retarded and normal groups'

levels of acquisition on the phonetic analysis skills. These relationships are described below.

Table 31

Summary: Level of Acquisition of the Retarded and Normal Groups -- Phonetic Analysis Skills

Basal reading skill	R.I.L. Primary	R.I.L. Intermediate
10.1 Associating vowel letters and sounds	N=R	N=R
10.2 Associating consonant letters and sounds	N=R	N=R
10.3 Associating consonant digraphs and sounds	N=R	N=R
10.8 Associating consonant blends and sounds	N=R	N>R
11.3 Using spelling patterns	N>R	N>R
13.1 Identifying syllables in orally and visually presented short words	N=R	N>R
12.1 Identifying syllables in visually presented short words	N=R	N>R
13.2 Identifying syllables in orally and visually presented long words	N>R	N>R
12.2 Identifying syllables in visually presented long words	N>R	N>R

Associating Vowel Letters and Sounds. -- The retarded and normal groups did not differ, at either the primary or intermediate instructional levels, in skill in associating vowel letters and sounds.

Associating Consonant Letters and Sounds. -- At both reading instructional levels, the retarded and normal groups did not differ in level in skill in associating consonant letters and sounds.

Associating Consonant Digraphs and Sounds. -- At both the primary and intermediate reading instructional levels, the retarded and normal groups did not differ in skill in associating consonant digraphs and sounds when the sounds were presented in isolation.

Associating Consonant Blends and Sounds. -- The retarded and normal groups did not differ at the primary reading instructional level. The normal group exceeded the retarded group, at the intermediate reading instructional level, in skill in associating consonant blends and sounds.

Using Spelling Patterns. -- At both the primary and intermediate reading instructional levels, the normal group exceeded the retarded group in the skill, using spelling patterns.

Identifying Syllables in Orally and Visually Presented Short Words. -- The retarded and normal groups did not differ at reading instructional level 3, the level at which the skill was introduced. The normal group exceeded the retarded group, at the intermediate reading instructional level, in skill in identifying syllables in orally and visually presented short words.

Identifying Syllables in Visually Presented Short Words. -- At reading instructional level 3, where the skill was introduced, the retarded and normal groups did not differ in skill in identifying syllables in short words presented only visually. The normal group exceeded the retarded group at the intermediate reading instructional level.

Identifying Syllables in Orally and Visually Presented Long Words. -- The normal group exceeded the retarded group, at both the primary and intermediate reading instructional levels, in skill in identifying syllables in long words presented visually and orally.

Identifying Syllables in Visually Presented Long Words. -- The normal group exceeded the retarded group, at both the primary and intermediate reading instructional levels, in skill in identifying syllables in long words presented visually.

Structural Analysis Skills

Seven structural analysis skills were examined. Table 32 contains a summary of relationships between the retarded and normal groups' levels of acquisition on the structural analysis skills. These relationships are described below.

Identifying Components of Compounds. -- The groups did not differ in level of acquisition, at the primary and intermediate reading instructional levels, in skill in identifying components of compounds.

Table 32

Summary: Level of Acquisition of the Retarded and Normal Groups -- Structural Analysis Skills

Basal reading skill	R.I.L.	
	Primary	Intermediate
3.1 Identifying components of compounds	N=R	N=R
4.1 Identifying roots, endings, and suffixes	N=R	N=R
4.2 Identifying roots and prefixes	N=R	N>R
4.4 Identifying roots and multiple affixes	N=R	N>R
2.1 Translating contractions	N=R	N>R
4.3 Locating roots by using root-change rules	N=R	N>R
1.1 Changing roots by using root-change rules	N=R	N>R

Identifying Roots, Endings, and Suffixes. -- The retarded and normal groups did not differ in level of acquisition, at the primary and intermediate reading instructional levels, in skill in identifying non-changing roots and inflectional and derivational suffixes.

Identifying Roots and Prefixes. -- At the primary reading instructional level, the retarded group and the normal group were homogeneous in skill in identifying roots and prefixes. At the intermediate reading instructional level, the normal group exceeded the retarded group.

Identifying Roots and Multiple Affixes. -- The retarded and normal groups did not differ at the primary reading instructional level. At the intermediate reading instructional level, the normal group exceeded the retarded group in initial skill in identifying roots and multiple affixes.

Translating Contractions. -- At the primary reading instructional level, the retarded and normal groups did not differ in skill in translating contractions. The normal group exceeded the retarded group in initial acquisition level at the intermediate reading instructional level.

Locating Roots by Using Root-change Rules. -- At the primary reading instructional level, the retarded and normal groups did not differ in skill in locating roots by using root-change rules. At the intermediate reading instructional level, the normal group exceeded the retarded group in initial skill.

Changing Roots by Using Root-change Rules. -- At the primary reading instructional level, the retarded group and the normal group did not differ in skill in applying root-change rules. At the intermediate reading instructional level, the normal group exceeded the retarded group.

Dictionary Skills

The set of dictionary skills included 10 skills. Table 33 contains a summary of the groups' levels of acquisition on the 10 dictionary skills. These relationships are described below.

Table 33

Summary: Level of Acquisition of the Retarded and Normal Groups -- Dictionary Skills

Basal reading skill	R.I.L.	
	Primary	Intermediate
5.1 Identifying alphabetical sequences based on first letter	N=R	N>R
5.2 Identifying alphabetical sequences based on third letter	N=R	N>R
5.3 Identifying alphabetical sequences based on first, second, or third letter	N=R	N=R
6.3 Using dictionary guide words	N=R	N>R
7.1 Finding definitions of single entry words	N=R	N>R
7.2 Finding definitions of multiple entry words	N=R	N>R
8.1 Selecting definitions of single entry words	--	N=R

Table 33 (Continued)

Basal reading skill	R.I.L. Primary	R.I.L. Intermediate
8.2 Selecting definitions of multiple entry words	--	N>R
9.1 Interpreting single pronunciation symbols	N=R	N>R
9.2 Interpreting multiple pronunciation symbols	N<R	N=R

Identifying Alphabetical Sequences Based on First Letter. -- The normal group and retarded group did not differ in initial skill at the primary reading instructional level. At the intermediate reading instructional level, the normal group had the higher level of skill in identifying alphabetical sequences based on first letter.

Identifying Alphabetical Sequences Based on Third Letter. -- The normal and retarded groups did not differ at the primary reading instructional level. At the intermediate reading instructional level, the normal group exceeded the retarded group in skill in identifying alphabetical sequences based on third letter.

Identifying Alphabetical Sequences Based on First, Second, or Third Letter. -- The groups did not differ, at the primary and intermediate reading instructional levels, in skill in identifying alphabetical sequences based on first, second, or third letter.

Using Dictionary Guide Words. -- At the intermediate reading instructional level, the normal group had the higher level of skill in using dictionary guide words. At the primary level, the groups did not differ.

Finding Definitions of Single Entry Words. -- At the primary reading instructional level, the retarded and normal groups did not differ in skill in finding definitions of single entry words. At the intermediate reading instructional level, the normal group achieved the higher level in the skill.

Finding Definitions of Multiple Entry Words. -- At the primary reading instructional level, the normal and retarded groups attained equivalent levels of skill in finding definitions of multiple entry words. At the intermediate reading instructional level, the normal group had the higher level of skill.

Selecting Definitions of Single Entry Words. -- At the intermediate reading instructional level, the normal and retarded groups did not differ in initial skill in selecting definitions of single entry words. (The skill was not taught at the primary reading instructional level.)

Selecting Definitions of Multiple Entry Words. -- At the intermediate reading instructional level, the normal group exceeded the retarded group in skill in selecting definitions of multiple entry words. (Again, the skill was not taught at the primary reading instructional level.)

Interpreting Single Pronunciation Symbols. -- At reading instructional level 3, the retarded and normal groups did not differ in skill in interpreting single pronunciation symbols. At the intermediate reading instructional level, the normal group exceeded the retarded group in the skill.

Interpreting Multiple Pronunciation Symbols. -- At reading instructional level 3, the retarded group attained the higher mean. At the intermediate reading instructional level, the groups did not differ in skill in interpreting multiple pronunciation symbols.

Word Functions Skills

Eight word functions skills were examined. Table 34 contains a summary of relationships between the normal and retarded groups' levels of acquisition on the word functions skills. These relationships are described below.

Recognizing Functions of Nouns. -- At the primary and intermediate reading instructional levels, the groups did not differ in initial skill in recognizing the functions of nouns.

Recognizing Functions of Verbs. -- At the primary and intermediate reading instructional levels, the retarded and normal groups had equivalent initial levels of skill in recognizing the functions of verbs.

Recognizing Functions of Adjectives. -- At both reading instructional levels, the retarded and normal groups had equivalent initial skill in recognizing the functions of adjectives.

Table 34

Summary: Level of Acquisition of the Retarded and Normal Groups -- Word Functions Skills

Basal reading skill	R.I.L.	
	Primary	Intermediate
14.1 Recognizing functions of nouns	N=R	N=R
14.2 Recognizing functions of verbs	N=R	N=R
14.3 Recognizing functions of adjectives	N=R	N=R
14.4 Recognizing functions of adverbs	N=R	N=R
15.1 Specifying functions of nouns	N=R	N=R
15.2 Specifying functions of verbs	N=R	N=R
15.3 Specifying functions of adjectives	N=R	N=R
15.4 Specifying functions of adverbs	N=R	N=R

Recognizing Functions of Adverbs. -- At the primary and intermediate reading instructional levels, the retarded and normal groups did not differ in initial skill in recognizing the functions of adverbs.

Specifying Functions of Nouns. -- At both the primary and intermediate reading instructional levels, the retarded and normal groups did not differ in initial facility in the skill of specifying the functions of nouns.

Specifying Functions of Verbs. -- At the primary and intermediate reading instructional levels, the retarded and normal groups did not differ in initial skill in specifying functions of verbs.

Specifying Functions of Adjectives. -- The groups showed equivalent initial skill, at the primary and intermediate reading instructional levels, in specifying functions of adjectives.

Specifying Functions of Adverbs. -- In dealing with adverbs, the retarded and normal groups were equivalent initially at both the primary and intermediate reading instructional levels.

Comprehension Skills

Fifteen comprehension skills were assessed. Table 35 consists of a summary of the relationships between the groups in terms of levels of acquisition on the comprehension skills. These relationships are described below.

Table 35

Summary: Level of Acquisition of the Retarded and Normal Groups -- Comprehension Skills

Basal reading skill	R.I.L.	
	Primary	Intermediate
16.1 Identifying cause-effect relationships directly stated in sentences	N=R	N=R
17.3 Identifying main ideas directly stated in paragraphs	N=R	N>R
17.1 Identifying main ideas directly stated in stories	N=R	N>R
16.2 Identifying cause-effect relationships implied in sentences	N=R	N>R
17.4 Identifying main ideas implied in paragraphs	N=R	N>R
17.2 Identifying main ideas implied in stories	N=R	N=R
17.5 Identifying details in stories	N=R	N>R
19.1 Interpreting similes	N>R	N>R
19.2 Interpreting idioms	N>R	N>R
19.3 Interpreting hyperboles	N>R	N>R
19.4 Interpreting personification	N>R	N>R
19.5 Interpreting metaphors	N>R	N=R
20.1 Predicting outcomes and actions[a]	N=R	N=R

Table 35 (Continued)

Basal reading skill	R.I.L. Primary	R.I.L. Intermediate
20.2 Discriminating between fact and fiction[b]	N=R	N=R
20.3 Discriminating between fact and opinion[c]	N>R	N>R

[a,b,c]The information presented here for these three critical reading skills is cited from Myers (1967).

Identifying Cause-effect Relationships Directly Stated in Sentences. -- At the primary and intermediate reading instructional levels, the groups did not differ in initial achievement level in grasping directly stated cause-effect relationships in sentences.

Identifying Main Ideas Directly Stated in Paragraphs. -- At the primary reading instructional level, the two groups achieved at similar levels of initial skill in identifying directly stated main ideas in paragraphs. At the intermediate reading instructional level, the normal group exceeded the retarded group in the skill.

Identifying Main Ideas Directly Stated in Stories. -- At the primary reading instructional level, the retarded and normal groups had equivalent initial levels of skill in identifying main ideas directly stated in stories. At the intermediate reading instructional level, the normal group exceeded the retarded group in the skill.

Identifying Cause-effect Relationships Implied in Sentences. -- At the primary reading instructional level, the normal group and retarded group did not differ in initial skill in identifying implicitly stated cause-effect relationships in sentences. At the intermediate level, the normal group exceeded the retarded group in the skill.

Identifying Main Ideas Implied in Paragraphs. -- At the intermediate reading instructional level, the normal group exceeded the retarded group in grasping implicitly stated main ideas in paragraphs, whereas, at the primary reading instructional level, the groups did not differ.

Identifying Main Ideas Implied in Stories. -- The groups did not differ at either of the two reading instructional levels in initial skill in grasping implicitly stated main ideas in stories.

Identifying Details in Stories. -- The retarded and normal groups differed only at the intermediate reading instructional level: here, the normal group had higher initial skill in grasping details.

Interpreting Similes. -- At both the primary and intermediate reading instructional levels, the normal group exceeded the retarded group in skill in interpreting similes.

Interpreting Idioms. -- The normal group exceeded the retarded group in skill in interpreting idioms at both the primary and the intermediate reading instructional levels.

Interpreting Hyperboles. -- The normal group, at both the primary and intermediate reading instructional levels, had the higher level of skill in interpreting hyperboles.

Interpreting Personification. -- The normal group exceeded the retarded group, at both the primary and intermediate reading instructional levels, in interpreting personification.

Interpreting Metaphors. -- At the primary reading instructional level, the normal group exceeded the retarded group in the skill. At the intermediate reading instructional level, the retarded group and the normal group did not differ in skill in interpreting metaphors.

Predicting Outcomes and Actions[1]. -- At the primary and intermediate reading instructional levels, the normal and retarded groups did not differ in initial achievement level in predicting outcomes and actions.

Discriminating Between Fact and Fiction[2]. -- At the primary and intermediate reading instructional levels, the groups did not differ in initial achievement level in distinguishing between fact and fiction.

Discriminating Between Fact and Opinion[3]. -- At the primary and intermediate reading instructional levels, the normal group exceeded the retarded group in skill in distinguishing fact from opinion.

Rate of Acquisition

In this section, information is presented about the retarded and normal groups' rates of acquisition, during the 7-month instructional period, on five categories of basal reading skills. The skill identifying words at sight is not considered here: this skill was measured only one time; data to reflect rate of acquisition were not available. Similarly, data reflecting rate of acquisition were available for only

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[1,2,3]These relationships are cited from Myers (1967).

seven comprehension skills.

Phonetic Analysis Skills

Table 36 contains a summary of relationships pertinent to the groups' rates of acquisition on the nine phonetic analysis skills. Specific relationships are cited below.

Table 36

Summary: Rate of Acquisition of the Retarded and Normal Groups -- Phonetic Analysis Skills

A. Significance of Increments During the 7-month Instructional Period

Basal reading skill	R.I.L.	
	Primary	Intermediate
10.1 Associating vowel letters and sounds	Significant	Significant
10.2 Associating consonant letters and sounds	Significant	Significant
10.3 Associating consonant digraphs and sounds	Significant	Significant
10.8 Associating consonant blends and sounds	Significant	Significant
11.3 Using spelling patterns	Significant	Significant
13.1 Identifying syllables in orally and visually presented short words	Significant	Significant
12.1 Identifying syllables in visually presented short words	Significant	Significant
13.2 Identifying syllables in orally and visually presented long words	Significant	Significant
12.2 Identifying syllables in visually presented long words	Significant	Significant

Table 36 (Continued)

B. Relationships Between Groups

Basal reading skill	R.I.L.	
	Primary	Intermediate
10.1 Associating vowel letters and sounds	N=R	N=R
10.2 Associating consonant letters and sounds	N=R	N=R
10.3 Associating consonant digraphs and sounds	N=R	N=R
10.8 Associating consonant blends and sounds	N=R	N=R
11.3 Using spelling patterns	N>R	N=R
13.1 Identifying syllables in orally and visually presented short words	N=R	N=R
12.1 Identifying syllables in visually presented short words	N=R	N=R
13.2 Identifying syllables in orally and visually presented long words	N=R	N=R
12.2 Identifying syllables in visually presented long words	N=R	N=R

Associating Vowel Letters and Sounds. -- At the primary and intermediate levels, the subjects showed significant increments during the 7-month instructional period. Neither group reached the task ceiling for associating vowel letters and sounds. The groups did not differ in acquisition rate.

Associating Consonant Letters and Sounds. -- At the primary and intermediate levels, the subjects showed significant increments during the 7-month instructional period. Neither group reached the task ceiling for associating consonant letters and sounds. The groups did not differ in acquisition rate.

Associating Consonant Digraphs and Sounds. -- At the primary and intermediate levels, the subjects showed significant increments during the 7-month instructional period. Neither group reached the task ceiling for associating consonant digraphs and sounds. The groups did not differ in acquisition rate.

Associating Consonant Blends and Sounds. -- At the primary and intermediate levels, the subjects showed significant increments during the 7-month instructional period. Neither group reached the task ceiling for associating consonant blends and sounds. The groups did not differ in acquisition rate.

Using Spelling Patterns. -- At the primary and intermediate levels, the subjects showed significant increments during the 7-month instructional period. Neither group reached the task ceiling for using spelling patterns. At the primary level, the normal group exceeded the retarded group in rate of acquisition; at the intermediate level, the groups did not differ.

Identifying Syllables in Orally and Visually Presented Short Words. -- At the primary and intermediate instructional levels, the subjects showed significant increments during the 7-month instructional period. Neither group reached the task ceiling on the skill. The groups did not differ in acquisition rate.

Identifying Syllables in Visually Presented Short Words. -- At the primary and intermediate levels, the subjects showed significant increments during the 7-month instructional period. Neither group reached the task ceiling on the skill. The groups did not differ in acquisition rate for identifying syllables in visually presented short words.

Identifying Syllables in Orally and Visually Presented Long Words. -- At the primary and intermediate levels, the subjects showed significant increments over the 7-month instructional period. Neither group reached the task ceiling. The retarded and normal groups did not differ in acquisition rate.

Identifying Syllables in Visually Presented Long Words. -- At the primary and intermediate levels, the subjects showed significant increments over the 7-month instructional period. Neither group reached the ceiling of the task. The groups did not differ in acquisition rate for identifying syllables in visually presented long words.

Structural Analysis Skills

Seven structural analysis skills were examined. Table 37 contains a summary of relationships pertinent to the groups' rates of acquisition on the seven structural analysis skills. These relationships are described below.

Identifying Components of Compounds. -- At the primary and intermediate levels, the retarded and normal subjects showed significant increments during the 7-month instructional period. Neither group reached the task ceiling for identifying components of compounds. The normal group exceeded the retarded group in acquisition rate at both the primary and intermediate reading instructional levels.

Table 37

Summary: Rate of Acquisition of the Retarded and Normal Groups -- Structural Analysis Skills

A. Significance of Increments During the 7-month Instructional Period

Basal reading skill	R.I.L.	
	Primary	Intermediate
3.1 Identifying components of compounds	Significant	Significant
4.1 Identifying roots, endings, and suffixes	Significant	Significant
4.2 Identifying roots and prefixes	Significant	Significant
4.4 Identifying roots and multiple affixes	Significant	Significant
2.1 Translating contractions	Significant	Significant
4.3 Locating roots by using root-change rules	Significant	Significant
1.1 Changing roots by using root-change rules	Significant	Significant

B. Relationships Between Groups

Basal reading skill	R.I.L.	
	Primary	Intermediate
3.1 Identifying components of compounds	N>R	N>R
4.1 Identifying roots, endings, and suffixes	N=R	N>R
4.2 Identifying roots and prefixes	N>R	N=R
4.4 Identifying roots and multiple affixes	N>R	N=R
2.1 Translating contractions	N>R	N=R
4.3 Locating roots by using root-change rules	N>R	N=R
1.1 Changing roots by using root-change rules	N>R	N=R

Identifying Roots, Endings, and Suffixes. -- At the primary and intermediate levels, the subjects showed significant increments during the 7-month instructional period. Neither group reached the task ceiling for identifying roots, endings, and suffixes. At the primary level, the two groups did not differ in acquisition rate; at the intermediate level, the normal group exceeded the retarded group.

Identifying Roots and Prefixes. -- At the primary and intermediate levels, the subjects showed significant increments during the 7-month instructional period. Neither group reached the task ceiling for identifying roots and prefixes. At the primary level, the normal group exceeded the retarded group in acquisition rate; at the intermediate level, the two groups did not differ.

Identifying Roots and Multiple Affixes. -- At the primary and intermediate levels, the subjects showed significant increments during the 7-month instructional period. Neither group reached the task ceiling for identifying roots and multiple affixes. At the primary level the normal group exceeded the retarded group in acquisition rate; at the intermediate level, the two groups did not differ.

Translating Contractions. -- At the primary and intermediate levels, the subjects showed significant increments during the 7-month instructional period. Neither group reached the task ceiling for translating contractions. At the primary level, the normal group exceeded the retarded group in acquisition rate; at the intermediate level, the groups did not differ.

Locating Roots by Using Root-change Rules. -- At the primary and intermediate levels, the subjects showed significant increments during the 7-month instructional period. Neither group reached the task ceiling for locating roots by using root-change rules. At the primary level, the normal group exceeded the retarded group in acquisition rate; at the intermediate Ievel, the two groups did not differ.

Changing Roots by Using Root-change Rules. -- At the primary and intermediate levels, the subjects showed significant increments during the 7-month instructional period. Neither group reached the ceiling for changing roots by using root-change rules. At the primary level, the normal group exceeded the retarded group in acquisition rate; at the intermediate level, the two groups did not differ.

Dictionary Skills

Table 38 contains a summary of the groups' relative rates of acquisition on the 10 dictionary skills. These relationships are described below.

Table 38

Summary: Rate of Acquisition of the Retarded and Normal Groups -- Dictionary Skills

A. Significance of Increments During the 7-month Instructional Period

Basal reading skill	R.I.L.	
	Primary	Intermediate
5.1 Identifying alphabetical sequences based on first letter	Significant	Significant
5.2 Identifying alphabetical sequences based on third letter	Significant	Significant
5.3 Identifying alphabetical sequences based on first, second, or third letter	Significant	Significant
6.3 Using dictionary guide words	Significant	Significant
7.1 Finding definitions of single entry words	Significant	Significant
7.2 Finding definitions of multiple entry words	Significant	Significant
8.1 Selecting definitions of single entry words	--	Significant
8.2 Selecting definitions of multiple entry words	--	Significant
9.1 Interpreting single pronunciation symbols	Significant	Significant
9.2 Interpreting multiple pronunciation symbols	Significant	Non-significant

B. Relationships Between Groups

Basal reading skill	R.I.L.	
	Primary	Intermediate
5.1 Identifying alphabetical sequences based on first letter	N=R	--[a]
5.2 Identifying alphabetical sequences based on third letter	N>R	N=R

Table 38 (Continued)

Basal reading skill	R.I.L. Primary	R.I.L. Intermediate
5.3 Identifying alphabetical sequences based on first, second, or third letter	N=R	N>R
6.3 Using dictionary guide words	N=R	N=R
7.1 Finding definitions of single entry words	N=R	N=R
7.2 Finding definitions of multiple entry words	N=R	N>R
8.1 Selecting definitions of single entry words	--	N=R
8.2 Selecting definitions of multiple entry words	--	N>R
9.1 Interpreting single pronunciation symbols	N>R	N=R
9.2 Interpreting multiple pronunciation symbols	N>R	--[b]

[a,b]The groups' rates of acquisition for these skills could not be compared at the intermediate level: on identifying alphabetical sequences based on first letter, the normal group approached the task ceiling; on interpreting multiple pronunciation symbols, the subjects did not show a significant increment.

Identifying Alphabetical Sequences Based on First Letter. -- At the primary and intermediate levels, the subjects showed significant increments during the 7-month instructional period. At the primary level, neither group reached the task ceiling for identifying alphabetical sequences based on first letter; at the intermediate level, the normal group approached the task ceiling. At the primary level, the two groups did not differ in acquisition rate; at the intermediate level, the groups' rates of acquisition could not be compared.

Identifying Alphabetical Sequences Based on Third Letter. -- At the primary and intermediate levels, the subjects showed significant increments during the 7-month instructional period. Neither group reached the task ceiling for identifying alphabetical sequences based on third letter. At the primary level, the normal group exceeded the retarded group in acquisition rate; at the intermediate level, the two groups did not differ.

Identifying Alphabetical Sequences Based on First, Second, or Third Letter. -- At the primary and intermediate levels, the subjects showed significant increments during the 7-month instructional period. Neither group reached the task ceiling for identifying alphabetical sequences based on first, second, or third letter. At the primary level, the two groups did not differ in acquisition rate; at the intermediate level, the normal group exceeded the retarded group.

Using Dictionary Guide Words. -- At the primary and intermediate levels, the subjects showed significant increments during the 7-month instructional period. Neither group reached the task ceiling for using dictionary guide words. The two groups did not differ in acquisition rate.

Finding Definitions of Single Entry Words. -- At the primary and intermediate levels, the subjects showed significant increments during the 7-month instructional period. Neither group reached the task ceiling for finding definitions of single entry words. The two groups did not differ in rate of acquisition.

Finding Definitions of Multiple Entry Words. -- At the primary and intermediate levels, the subjects showed significant increments during the 7-month instructional period. Neither group reached the task ceiling for finding definitions of multiple entry words. At the primary level, the two groups did not differ in acquisition rate; at the intermediate level, the normal group exceeded the retarded group.

Selecting Definitions of Single Entry Words. -- At the intermediate level, the two groups showed significant increments during the 7-month instructional period. Neither group reached the task ceiling for selecting definitions of single entry words. The two groups did not differ in acquisition rate at the intermediate level. (The skill was not taught at the primary reading instructional level.)

Selecting Definitions of Multiple Entry Words. -- At the intermediate level, the subjects showed significant increments during the 7-month instructional period. Neither group reached the task ceiling for selecting definitions of multiple entry words. At the intermediate level, the normal group exceeded the retarded group in acquisition rate. (The skill was not taught at the primary reading instructional level.)

Interpreting Single Pronunciation Symbols. -- At the primary and intermediate levels, the subjects showed significant increments during the 7-month instructional period. Neither group reached the task ceiling for interpreting single pronunciation symbols. At the primary level, the normal group exceeded the retarded group in acquisition rate; at the intermediate level, the two groups did not differ.

Interpreting Multiple Pronunciation Symbols. -- At the primary level, the subjects showed significant increments during the 7-month instructional period; at the intermediate level, no increment was shown. Neither of the groups reached the task ceiling for interpreting multiple pronunciation symbols. At the primary level, the normal group exceeded the retarded group in rate of acquisition; at the intermediate level, the two groups were not compared.

Word Functions Skills

Table 39 contains a summary of the retarded and normal groups' relative rates of acquisition on the eight word functions skills. These relationships are presented below.

Table 39

Summary: Rate of Acquisition of the Retarded and Normal Groups -- Word Functions Skills

A. Significance of Increments During the 7-month Instructional Period

Basal reading skill	R.I.L.	
	Primary	Intermediate
14.1 Recognizing functions of nouns	Significant	Significant
14.2 Recognizing functions of verbs	Significant	Significant
14.3 Recognizing functions of adjectives	Significant	Significant
14.4 Recognizing functions of adverbs	Significant	Significant
15.1 Specifying functions of nouns	Significant	Significant
15.2 Specifying functions of verbs	Significant	Non-significant
15.3 Specifying functions of adjectives	Significant	Significant
15.4 Specifying functions of adverbs	Significant	Non-significant

Table 39 (Continued)

B. Relationships Between Groups

Basal reading skill	R.I.L.	
	Primary	Intermediate
14.1 Recognizing functions of nouns	N>R	N=R
14.2 Recognizing functions of verbs	N>R	N>R
14.3 Recognizing functions of adjectives	N>R	N>R
14.4 Recognizing functions of adverbs	N=R	N>R
15.1 Specifying functions of nouns	N=R	N=R
15.2 Specifying functions of verbs	N=R	--[a]
15.3 Specifying functions of adjectives	N=R	N=R
15.4 Specifying functions of adverbs	N=R	--[b]

[a,b]The subjects did not show significant increments for these skills at the intermediate level; and so, the groups' rates of acquisition could not be compared.

Recognizing Functions of Nouns. -- At the primary and intermediate levels, the subjects showed significant increments during the 7-month instructional period. Neither group reached the task ceiling for recognizing functions of nouns. At the primary level, the normal group had the faster rate of acquisition; at the intermediate level, the two groups did not differ.

Recognizing Functions of Verbs. -- At the primary and intermediate levels, the subjects showed significant increments during the 7-month instructional period. Neither group reached the task ceiling for recognizing functions of verbs. The normal group had the faster rate of acquisition at both the primary and intermediate levels.

Recognizing Functions of Adjectives. -- At the primary and intermediate levels, the subjects showed significant increments during the 7-month instructional period. Neither group reached the task ceiling for recognizing functions of adjectives. The normal group exceeded the retarded group in acquisition rate at both the primary and intermediate levels.

Recognizing Functions of Adverbs. -- At the primary and intermediate levels, the subjects showed significant increments during the 7-month instructional period. Neither group reached the task ceiling for recognizing functions of adverbs. At the primary level, the two groups did not differ in acquisition rate; at the intermediate level, the

normal group exceeded the retarded group.

Specifying Functions of Nouns. -- At the primary and intermediate levels, the subjects showed significant increments during the 7-month instructional period. Neither group reached the task ceiling for specifying functions of nouns. At both levels, the two groups did not differ in rates of acquisition.

Specifying Functions of Verbs. -- At the primary level, the subjects showed significant increments during the 7-month instructional period; at the intermediate level, no increment was shown. Neither group reached the task ceiling for specifying functions of verbs. At the primary level, the groups did not differ in rates of acquisition; at the intermediate level, the groups' rates of acquisition could not be compared.

Specifying Functions of Adjectives. -- At the primary and intermediate levels, the subjects showed significant increments during the 7-month instructional period. Neither group reached the task ceiling for specifying functions of adjectives. At both levels, the two groups did not differ in acquisition rates.

Specifying Functions of Adverbs. -- At the primary level, the subjects showed significant increments during the 7-month instructional period; at the intermediate level, no increment was shown. Neither group reached the task ceiling for specifying functions of adverbs. At the primary level, the groups did not differ in acquisition rate; at the intermediate level, the groups' rates of acquisition could not be compared.

Comprehension Skills

Data indicating rate of acquisition during the 7-month instructional period were obtained for seven comprehension skills; the remaining eight skills were measured only one time. Table 40 contains a summary of the groups' relative rates of acquisition on the seven comprehension skills. These relationships are summarized below.

Identifying Cause-effect Relationships Directly Stated in Sentences. -- At the primary level, the subjects showed significant increments during the 7-month instructional period; at the intermediate level, no increment was shown. Neither group reached the task ceiling for identifying cause-effect relationships directly stated in sentences. At the primary level, the normal group had the faster rate of acquisition; at the intermediate level, the two groups could not be compared.

Table 40

Summary: Rate of Acquisition of the Retarded and Normal Groups -- Comprehension Skills

A. Significance of Increments During the 7-month Instructional Period

Basal reading skill	R.I.L.	
	Primary	Intermediate
16.1 Identifying cause-effect relationships directly stated in sentences	Significant	Non-significant
17.3 Identifying main ideas directly stated in paragraphs	Significant	Significant
17.1 Identifying main ideas directly stated in stories	Significant	Significant
16.2 Identifying cause-effect relationships implied in sentences	Significant	Significant
17.4 Identifying main ideas implied in paragraphs	Significant	Significant
17.2 Identifying main ideas implied in stories	Significant	Significant
17.5 Identifying details in stories	Significant	Significant

B. Relationships Between Groups

Basal reading skill	R.I.L.	
	Primary	Intermediate
16.1 Identifying cause-effect relationships directly stated in sentences	N>R	--[a]
17.3 Identifying main ideas directly stated in paragraphs	N>R	N=R
17.1 Identifying main ideas directly stated in stories	N=R	N=R
16.2 Identifying cause-effect relationships implied in sentences	N=R	N=R
17.4 Identifying main ideas implied in paragraphs	N>R	N=R

Table 40 (Continued)

Basal reading skill	R.I.L.	
	Primary	Intermediate
17.2 Identifying main ideas implied in stories	N>R	N>R
17.5 Identifying details in stories	N>R	N=R

[a]The subjects did not show a significant increment for this skill at the intermediate level; therefore, the rates of acquisition could not be compared.

Identifying Main Ideas Directly Stated in Paragraphs. -- At the primary and intermediate levels, the subjects showed significant increments during the 7-month instructional period. Neither group reached the task ceiling for identifying main ideas directly stated in paragraphs. At the primary level, the normal group had the faster rate of acquisition; at the intermediate level, the two groups did not differ.

Identifying Main Ideas Directly Stated in Stories. -- At the primary and intermediate levels, the subjects showed significant increments during the 7-month instructional period. Neither group reached the task ceiling for identifying main ideas directly stated in stories. At both levels, the groups did not differ in rate of acquisition.

Identifying Cause-effect Relationships Implied in Sentences. -- At the primary and intermediate levels, the subjects showed significant increments during the 7-month instructional period. Neither group reached the task ceiling for identifying cause-effect relationships implied in sentences. At both levels, the groups did not differ in rate of acquisition.

Identifying Main Ideas Implied in Paragraphs. -- At the primary and intermediate levels, the subjects showed significant increments during the 7-month instructional period. Neither group reached the task ceiling for identifying main ideas implied in paragraphs. At the primary level, the normal group had the faster rate of acquisition; at the intermediate level, the two groups did not differ.

Identifying Main Ideas Implied in Stories. -- At the primary and intermediate levels, the subjects showed significant increments during the 7-month instructional period. Neither group reached the task ceiling for identifying main ideas implied in stories. At both levels, the normal group showed the faster rate of acquisition.

Identifying Details in Stories. -- At the primary and intermediate levels, the subjects showed significant increments during the 7-month instructional period. Neither group reached the task ceiling for identifying details in stories. At the primary level, the normal group had the faster acquisition rate; at the intermediate level, the two groups did not differ.

Summary of Results

Level of Acquisition

Identifying Words At Sight

At both the primary and intermediate levels, the retarded and normal groups did not differ in initial level of acquisition in identifying words at sight.

Phonetic Analysis Skills

Primary Level. -- The retarded and normal groups at the primary level did not differ in level of acquisition on six phonetic analysis skills: associating vowel letters and sounds, associating consonant letters and sounds, associating consonant digraphs and sounds, associating consonant blends and sounds, identifying syllables in orally and visually presented short words, and identifying syllables in visually presented short words. The normal group exceeded the retarded group in level of acquisition on three phonetic analysis skills: identifying syllables in orally and visually presented long words, identifying syllables in visually presented long words, and using spelling patterns. The retarded group did not exceed the normal group in level of acquisition on any of the phonetic analysis skills.

Intermediate Level. -- The retarded and normal groups at the intermediate level did not differ in level of acquisition on three phonetic analysis skills: associating vowel letters and sounds, associating consonant letters and sounds, and associating consonant digraphs and sounds. The normal group exceeded the retarded group in level of acquisition on six phonetic analysis skills: associating

consonant blends and sounds, identifying syllables in orally and visually presented short words, identifying syllables in visually presented short words, identifying syllables in orally and visually presented long words, identifying syllables in visually presented long words, and using spelling patterns. The retarded group did not exceed the normal group in level of acquisition on any of the phonetic analysis skills.

Structural Analysis Skills

Primary Level. -- The retarded and normal groups at the primary level did not differ in level of acquisition on any of the seven structural analysis skills: identifying components of compounds, identifying roots, endings, and suffixes, identifying roots and prefixes, identifying roots and multiple affixes, translating contractions, locating roots by using root-change rules, and changing roots by using root-change rules.

Intermediate Level. -- The normal and retarded groups at the intermediate level did not differ in level of acquisition on two structural analysis skills: identifying components of compounds and identifying roots, endings, and suffixes. The normal group's level of acquisition exceeded that of the retarded group on five structural analysis skills: identifying roots and prefixes, identifying roots and multiple affixes, translating contractions, locating roots by using root-change rules, and changing roots by using root-change rules. The retarded group did not exceed the normal group in level of acquisition on any of the structural analysis skills.

Dictionary Skills

Primary Level. -- The normal and retarded groups at the primary level did not differ in level of acquisition on seven dictionary skills: identifying alphabetical sequences based on first letter, identifying alphabetical sequences based on third letter, identifying alphabetical sequences based on first, second, or third letter, using dictionary guide words, finding definitions of single entry words, finding

definitions of multiple entry words, and interpreting single pronunciation symbols. The normal group did not exceed the retarded group in level of acquisition on any of the dictionary skills. The retarded group exceeded the normal group in level of acquisition on one skill: interpreting multiple pronunciation symbols.

Intermediate Level. -- The two groups at the intermediate level did not differ in level of acquisition on three dictionary skills: identifying alphabetical sequences based on first, second, or third letter, selecting definitions of single entry words, and interpreting multiple pronunciation symbols. The normal group exceeded the retarded group in level of acquisition on seven dictionary skills: identifying alphabetical sequences based on first letter, identifying alphabetical sequences based on third letter, using dictionary guide words, finding definitions of single entry words, finding definitions of multiple entry words, selecting definitions of multiple entry words, and interpreting single pronunciation symbols. The retarded group did not exceed the normal group on any of the dictionary skills.

Word Functions Skills

Primary Level. -- The retarded and normal groups at the primary level did not differ in level of acquisition on any of the eight word functions skills: recognizing functions of nouns, recognizing functions of verbs, recognizing functions of adjectives, recognizing functions of adverbs, specifying functions of nouns, specifying functions of verbs, specifying functions of adjectives, and specifying functions of adverbs.

Intermediate Level. -- The retarded and normal groups at the intermediate level did not differ in level of acquisition on any of the eight word functions skills: recognizing functions of nouns, recognizing functions of verbs, recognizing functions of adjectives, recognizing functions of adverbs, specifying functions of nouns, specifying functions of verbs, specifying functions of adjectives, and specifying functions of adverbs.

Comprehension Skills

Primary Level. -- The retarded and normal groups at the primary level did not differ in level of acquisition on nine of the comprehension skills: identifying cause-effect relationships directly stated in sentences, identifying main ideas directly stated in paragraphs, identifying main ideas directly stated in stories, identifying cause-effect relationships implied in sentences, identifying main ideas implied in paragraphs, identifying main ideas implied in stories, identifying details in stories, predicting outcomes and actions, and discriminating between fact and fiction. The normal group exceeded the retarded group in level of acquisition on six comprehension skills: interpreting similes, interpreting idioms, interpreting hyperboles, interpreting personification, interpreting metaphors, and discriminating between fact and opinion. The retarded group did not exceed the normal group on any of the comprehension skills.

Intermediate Level. -- At the intermediate level, the normal and retarded groups did not differ in level of acquisition on five comprehension skills: identifying cause-effect relationships directly stated in sentences, identifying main ideas implied in stories, interpreting metaphors, predicting outcomes and actions, and discriminating between fact and fiction. The normal group exceeded the retarded group in level of acquisition on ten of the comprehension skills: identifying main ideas directly stated in paragraphs, identifying main ideas directly stated in stories, identifying cause-effect relationships implied in sentences, identifying main ideas implied in paragraphs, identifying details in stories, interpreting similes, interpreting idioms, interpreting hyperboles, interpreting personification, and discriminating between fact and opinion. The retarded group did not exceed the normal group in level of acquisition on any of the comprehension skills.

Rate of Acquisition

Phonetic Analysis Skills

Primary Level. -- The retarded and normal subjects at the primary level showed significant increments during the 7-month instructional period on all nine phonetic analysis skills. Neither group reached the ceiling on any task.

The retarded and normal groups at the primary level did not differ in rate of acquisition on eight of the nine skills: associating vowel letters and sounds, associating consonant letters and sounds, associating consonant digraphs and sounds, associating consonant blends and sounds, identifying syllables in orally and visually presented short words, identifying syllables in orally and visually presented long words, identifying syllables in visually presented short words, and identifying syllables in visually presented long words. The normal group had the faster acquisition rate on one skill: using spelling patterns. At the primary level, the retarded group did not exceed the normal group in rate of acquisition on any phonetic analysis skill.

Intermediate Level. -- The retarded and normal subjects at the intermediate level showed significant increments during the 7-month instructional period, on all nine phonetic analysis skills. Neither group reached the ceilings of the tasks.

The retarded and normal groups at the intermediate level did not differ in rate of acquisition on any of the nine phonetic analysis skills.

Structural Analysis Skills

Primary Level. -- The retarded and normal subjects at the primary level showed significant increments, during the 7-month instructional period, on all seven structural analysis skills. Neither group reached the ceiling of any task.

The normal and retarded groups at the primary level did not differ in rate of acquisition on one skill: identifying roots, endings, and

suffixes. On the remaining six structural analysis skills, the normal group exceeded the retarded group. These skills included identifying components of compounds, identifying roots and prefixes, identifying roots and multiple affixes, translating contractions, locating roots by using root-change rules, and changing roots by using root-change rules. At the primary level, the retarded group did not exceed the normal group in rate of acquisition on any structural analysis skills.

Intermediate Level. -- The retarded and normal subjects at the intermediate level showed significant increments during the 7-month instructional period on all seven skills. Neither group reached the ceiling of any task.

The two groups did not differ at the intermediate level on five structural analysis skills: identifying roots and prefixes, identifying roots and multiple affixes, translating contractions, locating roots by using root-change rules, and changing roots by using root-change rules. On the two remaining skills, the normal group exceeded the retarded group. These skills were identifying components of compounds and identifying roots, endings, and suffixes. At the intermediate level, the retarded group did not exceed the normal group in rate of acquisition on any structural analysis skills.

Dictionary Skills

Primary Level. -- The retarded and normal subjects at the primary level showed significant increments, during the 7-month instructional period, on eight dictionary skills. Two skills were not taught at the primary level: selecting definitions of single entry words and selecting definitions of multiple entry words. Neither group reached the ceiling of any task.

The two groups did not differ in rate of acquisition on five dictionary skills: identifying alphabetical sequences based on first letter, identifying alphabetical sequences based on first, second, or third letter, using dictionary guide words, finding definitions of single entry words, and finding definitions of multiple entry words. On the remaining three skills, the normal group exceeded the retarded

group. These skills were identifying alphabetical sequences based on third letter, interpreting single pronunciation symbols, and interpreting multiple pronunciation symbols. At the primary level, the retarded group did not exceed the normal group in rate of acquisition on any dictionary skills.

Intermediate Level. -- The retarded and normal groups at the intermediate level showed significant increments during the 7-month instructional period on nine dictionary skills. The dictionary skill in which no increment was shown was interpreting multiple pronunciation symbols. The normal group approached the task ceiling on identifying alphabetical sequences based on first letter. On the remaining eight skills, neither group reached the task ceiling.

The two groups did not differ in rate of acquisition on five dictionary skills: identifying alphabetical sequences based on third letter, using dictionary guide words, finding definitions of single entry words, selecting definitions of single entry words, and interpreting single pronunciation symbols. On three skills, the normal group exceeded the retarded group. These skills were identifying alphabetical sequences based on first, second, or third letter, finding definitions of multiple entry words, and selecting definitions of multiple entry words. The groups' rates of acquisition could not be compared on two skills: identifying alphabetical sequences based on first letter, where the normal group approached the task ceiling; interpreting multiple pronunciation symbols, where the subjects did not show significant increments. At the intermediate level, the retarded group did not exceed the normal group in rate of acquisition on any dictionary skills.

Word Functions Skills

Primary Level. -- The subjects at the primary level showed significant increments during the 7-month instructional period on all eight word functions skills. Neither group reached the task ceiling for any task.

At the primary level, the two groups did not differ in rate of acquisition on five word functions skills: recognizing functions of adverbs, specifying functions of nouns, specifying functions of verbs, specifying functions of adjectives, and specifying functions of adverbs. On the remaining three word functions skills, the normal group exceeded the retarded group in acquisition rate. These skills were recognizing functions of nouns, recognizing functions of verbs, and recognizing functions of adjectives. At the primary level, the retarded group did not exceed the normal group in rate of acquisition on any word functions skills.

Intermediate Level. -- The retarded and normal subjects at the intermediate level showed significant increments, during the 7-month instructional period, on six of the eight word functions skills. The skills in which no increments were shown included specifying functions of verbs and specifying functions of adverbs. Neither group reached the task ceiling for any skill.

At the intermediate level, the two groups did not differ in rate of acquisition on three word functions skills: recognizing functions of nouns, specifying functions of nouns, and specifying functions of adjectives. On three skills, the normal group exceeded the retarded group. These skills were recognizing functions of verbs, recognizing functions of adjectives, and recognizing functions of adverbs. The two groups' rates of acquisition could not be compared on specifying functions of verbs and specifying functions of adverbs since the subjects did not show significant increments. At the intermediate level, the retarded group did not exceed the normal group on any dictionary skills.

Comprehension Skills

Primary Level. -- The subjects at the primary level showed significant increments, during the 7-month instructional period, on all seven comprehension skills. Neither group reached the task ceiling for any skill.

At the primary level, the retarded and normal subjects did not differ in acquisition rate on two of the seven comprehension skills: identifying main ideas directly stated in stories and identifying cause-effect relationships implied in sentences. On the remaining five skills, the normal group exceeded the retarded group. These skills were identifying cause-effect relationships directly stated in sentences, identifying main ideas directly stated in paragraphs, identifying main ideas implied in paragraphs, identifying main ideas implied in stories, and identifying details in stories. At the primary level, the retarded group did not exceed the normal group in rate of acquisition on any comprehension skills.

Intermediate Level. -- The subjects at the intermediate level showed significant increments, during the 7-month instructional period, on all but one comprehension skill: identifying cause-effect relationships directly stated in sentences. Neither group reached the task ceiling for any skill.

At the intermediate level, the retarded and normal subjects did not differ in acquisition rate on five of the seven comprehension skills: identifying main ideas directly stated in paragraphs, identifying main ideas directly stated in stories, identifying cause-effect relationships implied in sentences, identifying main ideas implied in paragraphs, and identifying details in stories. On one skill, identifying main ideas implied in stories, the normal group exceeded the retarded group. The groups' rates of acquisition could not be compared on identifying cause-effect relationships directly stated in sentences because the subjects did not show significant increments. At the intermediate level, the retarded group did not exceed the normal group in rate of acquisition on any comprehension skills.

CHAPTER 7

INTELLECTUALLY NORMAL AND SUPERIOR GROUPS' ACHIEVEMENT IN THE BASAL READING SKILLS

The present chapter is focused on the fifth research objective for the investigation: to compare intellectually normal and superior groups' achievement in the basal reading skills. Specific research questions pertained to normal and superior groups who are equated on CA level and who are taught at the same reading instructional levels[1].

a. Level of Acquisition in the Basal Reading Skills. -- At the primary and intermediate reading instructional levels, do normal and superior groups differ in level of acquisition in the basal reading skills at the beginning of a 7-month instructional period?

b. Rate of Acquisition in the Basal Reading Skills. -- At the primary and intermediate reading instructional levels, do normal and superior groups differ in rate of acquisition in the basal reading skills during a 7-month instructional period?

Chapters 1 and 2 contain details about related research and procedures. Major points are summarized here.

The reading achievement of intellectually superior and less intelligent elementary school pupils who were equated for MA has been studied by several investigators. Bleismer (1952) and Merrill (1924) studied status while Davidson (1931) compared progress over a specified period

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[1]Related, and very important, research questions are implicit in the following problem. Do normal and superior groups, or retarded and superior groups, who are equated on MA and general reading achievement levels and who are taught at the same reading instructional levels, differ in level and rate of acquisition in basal reading skills? This problem is not being studied in the present investigation. The present investigators could not locate a sufficient sample of intellectually superior pupils at reading instructional levels 2, 3, 4, and 5 who could be equated with less intelligent pupils on MA, reading achievement level, and instructional level at which they were being taught reading.

of time, 1 1/2 months. The present investigators located no research on the relative levels and rates of acquisition of normal and superior groups equated for CA and reading instructional level; this problem is the concern in this phase of the present investigation.

The normal and superior groups each consisted of four groups of subjects taught at reading instructional levels 2, 3, 4, and 5, respectively. Pupils in the four reading instructional levels were grouped into two levels (primary and intermediate) for the analyses of level and rate of acquisition. The normal and superior subjects were equated as groups on CA, and the frequencies of boys and girls did not differ significantly.

The subjects were taught in the Scott, Foresman New Basic Readers program during the school year. They were administered 20 tests designed to assess 50 basal reading skills taught in the instructional program. Tests #1-#17 measuring 41 basal reading skills were administered in the fall and again in the spring. Tests #18, #19, and #20 measuring nine basal reading skills were administered only one time; test #18 was given only in the fall and tests #19 and #20 were administered only in the spring.

Data related to the first research question, level of acquisition, were scores on the fall administration of tests #1-#17 and scores on #18, #19, and #20. These data were analyzed with *t* tests. For each skill, a comparison was made of the normal and superior groups at the primary and intermediate levels, respectively.

Data for the second research question, rate of acquisition, were scores on the fall and spring administrations of tests administered two times, tests #1-#17. Separate analyses were performed at the primary and intermediate levels. The data were processed in a two-factor analysis of variance model, one factor being repeated measures. The Lindquist (1953) Type I design was the specific model used.

In this chapter, separate sections are devoted to information pertinent to the two research questions, level and rate of acquisition. In these sections, information is presented about reading skills in the six categories of skills. Information for each category includes

descriptions of relationships for each skill in the category. After the groups' levels of acquisition and rates of acquisition are considered separately, the information is summarized in a separate section. The text includes only references to relationships indicated by the statistical results. Appendix T contains detailed statistical data.

Level of Acquisition

Identifying Words at Sight

At both the primary and intermediate levels, the superior group exceeded the normal group in level of acquisition on identifying words at sight. Table 41 contains relevant data.

Table 41

Summary: Level of Acquisition of the Normal and Superior Groups -- Identifying Words at Sight

Basal reading skill	R.I.L.	
	Primary	Intermediate
18.1 Identifying words at sight	N<S	N<S

Phonetic Analysis Skills

Nine phonetic analysis skills were examined. Table 42 contains a summary of the normal and superior groups' levels of acquisition on these skills.

Associating Vowel Letters and Sounds. -- The superior and normal groups did not differ, at either instructional level, in skill in associating vowel letters and sounds.

Table 42

Summary: Level of Acquisition of the Normal and Superior Groups -- Phonetic Analysis Skills

Basal reading skill	R.I.L.	
	Primary	Intermediate
10.1 Associating vowel letters and sounds	N=S	N=S
10.2 Associating consonant letters and sounds	N<S	N=S
10.3 Associating consonant digraphs and sounds	N<S	N<S
10.8 Associating consonant blends and sounds	N<S	N=S
11.3 Using spelling patterns	N<S	N<S
13.1 Identifying syllables in orally and visually presented short words	N<S	N<S
12.1 Identifying syllables in visually presented short words	N=S	N<S
13.2 Identifying syllables in orally and visually presented long words	N<S	N<S
12.2 Identifying syllables in visually presented long words	N=S	N<S

Associating Consonant Letters and Sounds. -- At the primary reading instructional level, the superior group exceeded the normal group in associating consonant letters and sounds. At the intermediate reading instructional level, the groups did not differ.

Associating Consonant Digraphs and Sounds. -- At both the primary and intermediate reading instructional levels, the superior group exceeded the normal group in skill in associating consonant digraphs and sounds when the sounds were presented in isolation.

Associating Consonant Blends and Sounds. -- The superior group exceeded the normal group at the primary reading instructional level. The normal and superior groups did not differ, at the intermediate reading instructional level, in skill in associating consonant blends and sounds.

Using Spelling Patterns. -- At both the primary and intermediate reading instructional levels, the superior group exceeded the normal group in skill in using spelling patterns as clues to pronouncing vowel sounds in one-syllable words, polysyllabic words with accented first syllables, and polysyllablic words with accented final syllables.

Identifying Syllables in Orally and Visually Presented Short Words. -- The superior group exceeded the normal group, at both the primary and intermediate reading instructional levels, in skill in identifying syllables in orally and visually presented short words.

Identifying Syllables in Visually Presented Short Words. -- At the primary level, the normal and superior groups did not differ in initial status in the skill; at the intermediate reading instructional level, the superior group exceeded the normal group in skill in identifying syllables in short words which were presented only visually.

Identifying Syllables in Orally and Visually Presented Long Words. -- At the primary and intermediate reading instructional levels, the superior group exceeded the normal group in skill in identifying syllables in long words presented both orally and visually.

Identifying Syllables in Visually Presented Long Words. -- The normal group and the superior group did not differ at the primary reading instructional level in skill in identifying syllables in long words presented visually. The superior group exceeded the normal group at the intermediate reading instructional level.

Structural Analysis Skills

Seven structural analysis skills were assessed. Table 43 contains a summary of the normal and superior groups' levels of acquisition on these skills. Specific relationships for each of the structural analysis skills are described below.

Identifying Components of Compounds. -- The superior group exceeded the normal group in level of acquisition, at the primary and intermediate reading instructional levels, in skill in identifying components of compounds.

Identifying Roots, Endings, and Suffixes. -- The normal and superior groups did not differ in level of acquisition, at the primary reading instructional level , in skill in identifying roots, endings, and suffixes. At the intermediate reading instructional level, the superior group exceeded the normal group.

Table 43

Summary: Level of Acquisition of the Normal and Superior Groups -- Structural Analysis Skills

Basal reading skill	R.I.L. Primary	R.I.L. Intermediate
3.1 Identifying components of compounds	N<S	N<S
4.1 Identifying roots, endings, and suffixes	N=S	N<S
4.2 Identifying roots and prefixes	N<S	N<S
4.4 Identifying roots and multiple affixes	N=S	N=S
2.1 Translating contractions	N<S	N<S
4.3 Locating roots by using root-change rules	N=S	N=S
1.1 Changing roots by using root-change rules	N=S	N<S

Identifying Roots and Prefixes. -- At both the primary and the intermediate reading instructional levels, the superior group exceeded the normal group in skill in identifying roots and prefixes.

Identifying Roots and Multiple Affixes. -- The superior and normal groups did not differ, at the primary and intermediate reading instructional levels, in initial skill in identifying roots and multiple affixes.

Translating Contractions. -- The superior group exceeded the normal group in acquisition level at the primary and intermediate reading instructional levels in skill in translating contractions.

Locating Roots by Using Root-change Rules. -- At the primary and intermediate reading instructional levels, the normal and superior groups did not differ in skill in locating roots by using root-change rules.

Changing Roots by Using Root-change Rules. -- At the primary level, the two groups did not differ in skill in changing roots by using root-change rules. At the intermediate level, the superior group exceeded the normal group in initial skill.

Dictionary Skills

The set of dictionary skills included 10 skills. Table 44 contains a summary of the normal and superior groups' acquisition levels on the 10 dictionary skills. Specific relationships for each of the 10 dictionary skills are described below.

Table 44

Summary: Level of Acquisition of the Normal and Superior Groups -- Dictionary Skills

Basal reading skill	R.I.L.	
	Primary	Intermediate
5.1 Identifying alphabetical sequences based on first letter	N<S	N<S
5.2 Identifying alphabetical sequences based on third letter	N<S	N<S
5.3 Identifying alphabetical sequences based on first, second, or third letter	N=S	N<S
6.3 Using dictionary guide words	N=S	N<S
7.1 Finding definitions of single entry words	N<S	N=S
7.2 Finding definitions of multiple entry words	N<S	N=S
8.1 Selecting definitions of single entry words	--	N<S
8.2 Selecting definitions of multiple entry words	--	N<S
9.1 Interpreting single pronunciation symbols	N<S	N<S
9.2 Interpreting multiple pronunciation symbols	N=S	N=S

Identifying Alphabetical Sequences Based on First Letter. -- The superior group exceeded the normal group in initial skill, at the primary and intermediate reading instructional levels, in identifying alphabetical sequences based on first letter.

Identifying Alphabetical Sequences Based on Third Letter. -- At the primary and intermediate reading instructional levels, the superior group exceeded the normal group in skill in identifying alphabetical sequences based on third letter.

Identifying Alphabetical Sequences Based on First, Second, or Third Letter. -- The normal and superior groups did not differ, at the primary reading instructional level, in skill in identifying alphabetical sequences based on first, second, or third letter. The superior group exceeded the normal group at the intermediate reading instructional level.

Using Dictionary Guide Words. -- At the intermediate reading instructional level, the superior group had the higher level of skill in using dictionary guide words. The normal and superior groups did not differ at the primary level.

Finding Definitions of Single Entry Words. -- At the primary reading instructional level, the superior group exceeded the normal group in skill in finding definitions of single entry words. At the intermediate reading instructional level, the normal and superior groups achieved similar levels in the skill.

Finding Definitions of Multiple Entry Words. -- At the primary reading instructional level, the superior group exceeded the normal group in level of skill in finding definitions of multiple entry words. At the intermediate instructional level, the normal group did not differ from the superior group.

Selecting Definitions of Single Entry Words. -- At the intermediate reading instructional level, the superior group exceeded the normal group in initial skill in selecting definitions of single entry words. (The skill was not taught at the primary reading instructional level.)

Selecting Definitions of Multiple Entry Words. -- At the intermediate instructional level, the superior group exceeded the normal group in skill in selecting definitions of multiple entry words. (Again, the skill was not taught at the primary reading instructional level.)

Interpreting Single Pronunciation Symbols. -- At both the primary and intermediate reading instructional levels, the superior group exceeded the normal group in skill in interpreting single pronunciation symbols.

Interpreting Multiple Pronunciation Symbols. -- At both the primary and intermediate reading instructional levels, the normal and superior groups did not differ in skill in interpreting multiple pronunciation symbols.

Word Functions Skills

Eight word functions skills were examined. Table 45 contains a summary of the normal and superior groups' acquisition levels on the eight word functions skills. Specific relationships for each of the word functions skills are described below.

Table 45

Summary: Level of Acquisition of the Normal and Superior Groups -- Word Functions Skills

Basal reading skill	R.I.L.	
	Primary	Intermediate
14.1 Recognizing functions of nouns	N<S	N<S
14.2 Recognizing functions of verbs	N<S	N<S
14.3 Recognizing functions of adjectives	N<S	N<S
14.4 Recognizing functions of adverbs	N<S	N<S
15.1 Specifying functions of nouns	N=S	N<S
15.2 Specifying functions of verbs	N=S	N<S
15.3 Specifying functions of adjectives	N=S	N<S
15.4 Specifying functions of adverbs	N>S	N<S

Recognizing Functions of Nouns. -- At the primary and intermediate reading instructional levels, the superior group exceeded the normal group in initial skill in recognizing the functions of nouns.

Recognizing Functions of Verbs. -- At the primary and intermediate reading instructional levels, the superior group had the higher level of initial skill in recognizing the functions of verbs.

Recognizing Functions of Adjectives. -- At both reading instructional levels, the superior group attained a higher level than the normal group in initial skill in recognizing the functions of adjectives.

Recognizing Functions of Adverbs. -- At the primary and intermediate reading instructional levels, the superior group exceeded the normal group in initial skill in recognizing the functions of adverbs.

Specifying Functions of Nouns. -- At the primary reading instructional level, the superior and normal groups did not differ in initial facility in specifying the functions of nouns. At the intermediate reading instructional level, the superior group exceeded the normal group.

Specifying Functions of Verbs. -- At the primary reading instructional level, the superior and normal groups did not differ in initial skill in specifying the functions of verbs. At the intermediate level, the superior group had the higher level of skill.

Specifying Functions of Adjectives. -- The superior and normal groups showed equivalent initial skill, at the primary reading instructional level, in specifying the functions of adjectives. At the intermediate reading instructional level, the superior group exceeded the normal group.

Specifying Functions of Adverbs. -- The normal group exceeded the superior group at the primary reading instructional level. At the intermediate level, the relationship was reversed: the superior group exceeded the normal group.

Comprehension Skills

Status measures were obtained for fifteen comprehension skills. Table 46 contains a summary of relationships between the normal and superior groups in terms of levels of acquisition on the comprehension skills. Specific relationships for each of the comprehension skills are described below.

Identifying Cause-effect Relationships Directly Stated in Sentences. -- At the primary reading instructional level, the groups did not differ in initial achievement level in identifying directly stated cause-effect relationships in sentences. At the intermediate level, the superior group exceeded the normal group.

Table 46

Summary: Level of Acquisition of the Normal and Superior Groups -- Comprehension Skills

Basal reading skill	R.I.L. Primary	R.I.L. Intermediate
16.1 Identifying cause-effect relationships directly stated in sentences	N=S	N<S
17.3 Identifying main ideas directly stated in paragraphs	N<S	N<S
17.1 Identifying main ideas directly stated in stories	N<S	N<S
16.2 Identifying cause-effect relationships implied in sentences	N<S	N<S
17.4 Identifying main ideas implied in paragraphs	N<S	N<S
17.2 Identifying main ideas implied in stories	N<S	N<S
17.5 Identifying details in stories	N<S	N<S
19.1 Interpreting similes	N=S	N=S
19.2 Interpreting idioms	N<S	N<S
19.3 Interpreting hyperboles	N=S	N<S
19.4 Interpreting personification	N=S	N<S
19.5 Interpreting metaphors	N<S	N<S
20.1 Predicting outcomes and actions [a]	N<S	N<S
20.2 Discriminating between fact and fiction [b]	N<S	N<S
20.3 Discriminating between fact and opinion [c]	N<S	N<S

[a,b,c] The information presented here for the three critical reading skills is cited from Myers (1967).

Identifying Main Ideas Directly Stated in Paragraphs. -- At the primary and intermediate reading instructional levels, the superior group exceeded the normal group in skill in identifying directly stated main ideas in paragraphs.

Identifying Main Ideas Directly Stated in Stories. -- At the primary and intermediate reading instructional levels, the superior group exceeded the normal group in initial levels of skill in identifying main ideas directly stated in stories.

Identifying Cause-effect Relationships Implied in Sentences. -- At the primary and intermediate reading instructional levels, the superior group had the higher level of skill in identifying implicitly stated cause-effect relationships in sentences.

Identifying Main Ideas Implied in Paragraphs. -- At the primary and intermediate reading instructional levels, the superior group exceeded the normal group in identifying implicitly stated main ideas in paragraphs.

Identifying Main Ideas Implied in Stories. -- The superior group reached a higher level than the normal group, at the two reading instructional levels, in initial skill in identifying implicitly stated main ideas in stories.

Identifying Details in Stories. -- At both the primary and intermediate reading instructional levels, the superior group had the higher initial skill in grasping details.

Interpreting Similes. -- At both the primary and intermediate reading instructional levels, the normal and superior groups did not differ in skill in interpreting similes.

Interpreting Idioms. -- The superior group exceeded the normal group, at both the primary and intermediate reading instructional levels, in skill in interpreting idioms.

Interpreting Hyperboles. -- At the primary level, the normal and superior groups did not differ. At the intermediate level, the superior group had the higher level of skill in interpreting hyperboles.

Interpreting Personification. -- The superior group exceeded the normal group at the intermediate reading instructional level. At the primary level, the groups did not differ in skill in interpreting personification.

Interpreting Metaphors. -- At the primary and intermediate reading instructional levels, the superior group exceeded the normal group in skill in interpreting metaphors.

Predicting Outcomes and Actions.[1] -- At the primary and intermediate levels, the superior group exceeded the normal group in skill in predicting outcomes and actions.

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[1]This relationship is cited from Myers (1967).

Discriminating Between Fact and Fiction[1]. -- At the primary and intermediate levels, the superior group exceeded the normal group in skill in discriminating between fact and fiction.

Discriminating Between Fact and Opinion[2]. -- At the primary and intermediate levels, the superior group exceeded the normal group in skill in discriminating between fact and opinion.

Rate of Acquisition

In this section, information is presented about the superior and normal groups' rates of acquisition, during the 7-month instructional period, on five categories of basal reading skills: the phonetic analysis skills, structural analysis skills, dictionary skills, word functions skills, and seven comprehension skills.

Phonetic Analysis Skills

Table 47 contains a summary of results reflecting the groups' rates of acquisition on the nine phonetic analysis skills. Relationships present for each skill are presented in detail below.

Associating Vowel Letters and Sounds. -- At the primary and intermediate levels, neither group reached the task ceiling. The superior and normal subjects at both levels did not show significant increments, during the 7-month instructional period, in skill in associating vowel letters and sounds; therefore, the two groups could not be compared at either level.

Associating Consonant Letters and Sounds. -- At the primary and intermediate level, the subjects showed significant increments on associating consonant letters and sounds during the 7-month instructional period. At the primary and intermediate reading instructional levels, the superior and normal groups were equivalent in rate of acquisition.

[1,2]These relationships are cited from Myers (1967).

Table 47

Summary: Rate of Acquisition of the Normal and Superior Groups -- Phonetic Analysis Skills

A. Significance of Increments During the 7-month Instructional Period

Basal reading skill	R.I.L.	
	Primary	Intermediate
10.1 Associating vowel letters and sounds	Non-significant	Non-significant
10.2 Associating consonant letters and sounds	Significant	Significant
10.3 Associating consonant digraphs and sounds	Significant	Significant
10.8 Associating consonant blends and sounds	Significant	Significant
11.3 Using spelling patterns	Significant	Significant
13.1 Identifying syllables in orally and visually presented short words	Significant	Significant
12.1 Identifying syllables in visually presented short words	Significant	Significant
13.2 Identifying syllables in orally and visually presented long words	Significant	Significant
12.2 Identifying syllables in visually presented long words	Significant	Significant

B. Relationships Between Groups

Basal reading skill	R.I.L.	
	Primary	Intermediate
10.1 Associating vowel letters and sounds	--[a]	--[b]
10.2 Associating consonant letters and sounds	N=S	N=S
10.3 Associating consonant digraphs and sounds	N>S	N=S
10.8 Associating consonant blends and sounds	N=S	N=S
11.3 Using spelling patterns	N=S	N=S

Table 47 (Continued)

Basal reading skill	R.I.L. Primary	R.I.L. Intermediate
13.1 Identifying syllables in orally and visually presented short words	N=S	--[c]
12.1 Identifying syllables in visually presented short words	N=S	N=S
13.2 Identifying syllables in orally and visually presented long words	N=S	N=S
12.2 Identifying syllables in visually presented long words	N<S	N=S

[a,b,c]The groups' rates of acquisition for these skills could not be compared: at the primary and intermediate levels, the subjects did not show a significant increment on associating vowel letters and sounds; at the intermediate level, the superior group approached the task ceiling on identifying syllables in orally and visually presented short words.

Associating Consonant Digraphs and Sounds. -- At both the primary and intermediate levels, the subjects showed significant increments during the 7-month instructional period. Neither group reached the ceiling of the task. At the primary level, the normal group had the faster rate of acquisition. At the intermediate level, the superior and normal groups did not differ in rate of acquisition in skill in associating consonant digraphs and sounds when the sounds were presented in isolation.

Associating Consonant Blends and Sounds. -- At the primary and intermediate levels, the subjects showed significant increments on associating consonant blends and sounds during the instructional period. Neither group reached the task ceiling. At both reading instructional levels, the normal and superior groups did not differ in rate of acquisition.

Using Spelling Patterns. -- At the primary and intermediate levels, the subjects showed significant increments during the 7-month instructional period on using spelling patterns. Neither group reached the ceiling of the task. At both instructional levels, the superior and normal groups did not differ in rate of acquisition.

Identifying Syllables in Orally and Visually Presented Short Words. -- At the primary level, the subjects showed significant increments and did not reach the task ceiling for the skill. The normal and superior groups did not differ in rate of acquisition in skill in identifying syllables in orally and visually presented short words. At the intermediate level, the superior subjects reached the task ceiling; therefore, the normal and superior groups could not be compared on rate of acquisition at this level.

Identifying Syllables in Visually Presented Short Words. -- Significant increments were shown at both the primary and intermediate levels during the 7-month instructional period. Neither group reached the ceiling of the task. At both reading instructional levels, the normal and superior groups did not differ in rate of acquisition in identifying syllables in short words which were presented only visually.

Identifying Syllables in Orally and Visually Presented Long Words. -- At both the primary and intermediate levels, the subjects showed significant increments on identifying syllables in orally and visually presented long words during the 7-month instructional period. Neither group reached the task ceiling for the skill. The normal and the superior group, at both reading instructional levels, did not differ in rate of acquisition.

Identifying Syllables in Visually Presented Long Words. -- At both the primary and intermediate levels, the subjects showed significant increments on identifying syllables in visually presented long words during the instructional period. Neither group reached the ceiling on the task. The superior group exceeded the normal group in rate of acquisition at the primary level. At the intermediate reading instructional level, the normal and superior groups did not differ.

Structural Analysis Skills

Information about the normal and superior groups' relative rates of acquisition on the seven structural analysis skills is summarized in Table 48 Relationships present for each skill are listed below.

Identifying Components of Compounds. -- At the primary level, the subjects showed significant increments on identifying components of compounds during the instructional period. Neither group reached the task ceiling. The normal group exceeded the superior group in rate of acquisition. At the intermediate level, the subjects showed significant increments; however, since both groups approached the task ceiling, the rates of acquisition could not be compared.

Table 48

Summary: Rate of Acquisition of the Normal and Superior Groups -- Structural Analysis Skills

A. Significance of Increments During the 7-month Instructional Period

Basal reading skill	R.I.L. Primary	R.I.L. Intermediate
3.1 Identifying components of compounds	Significant	Significant
4.1 Identifying roots, endings, and suffixes	Significant	Significant
4.2 Identifying roots and prefixes	Significant	Significant
4.4 Identifying roots and multiple affixes	Significant	Significant
2.1 Translating contractions	Significant	Significant
4.3 Locating roots by using root-change rules	Significant	Significant
1.1 Changing roots by using root-change rules	Significant	Significant

B. Relationships Between Groups

Basal reading skill	R.I.L. Primary	R.I.L. Intermediate
3.1 Identifying components of compounds	N>S	--[a]
4.1 Identifying roots, endings, and suffixes	N=S	N=S
4.2 Identifying roots and prefixes	N=S	N=S
4.4 Identifying roots and multiple affixes	N>S	N=S
2.1 Translating contractions	N>S	N=S
4.3 Locating roots by using root-change rules	N=S	N>S
1.1 Changing roots by using root-change rules	N=S	N=S

[a]The groups' rates of acquisition for this skill could not be compared at the intermediate level on identifying components of compounds; the normal and superior subjects approached the task ceiling.

Identifying Roots, Endings, and Suffixes. -- At the primary and intermediate reading instructional levels, the superior and normal groups did not differ in acquisition rate, during the 7-month instructional period, in skill in identifying roots, endings, and suffixes. At both levels, the subjects showed significant increments. Neither group reached the ceiling of the task.

Identifying Roots and Prefixes. -- At the primary and intermediate reading instructional levels, the normal group and superior group did not differ in rate of acquisition in skill in identifying prefixes and roots. At both levels, the subjects showed significant increments during the 7-month instructional period. Neither group reached the ceiling of the task.

Identifying Roots and Multiple Affixes. -- At the primary reading instructional level, the superior group exceeded the normal group in rate of acquisition in skill in identifying roots and multiple affixes. At the intermediate reading instructional level, the normal group and the superior group did not differ in rate of acquisition during the 7-month instructional period. At both levels, the subjects showed significant increments. Neither group reached the task ceiling.

Translating Contractions. -- The normal group exceeded the superior group in rate of acquisition at the primary reading instructional level. At the intermediate reading instructional level, the groups did not differ in rate of acquisition during the 7-month instructional period. At both levels, the subjects showed significant increments. Neither group reached the ceiling of the task.

Locating Roots by Using Root-change Rules. -- At the primary reading instructional level, the normal and superior groups had equivalent rates of acquisition during the instructional period. At the intermediate reading instructional level, the normal group had the faster acquisition rate. At both levels, the subjects showed significant increments. Neither group reached the task ceiling.

Changing Roots by Using Root-change Rules. -- At both the primary and intermediate reading instructional levels, the normal and superior groups did not differ in rate of acquisition, during the 7-month instructional period, in skill in applying root-change rules. The subjects showed significant increments over the instructional period. Neither group reached the ceiling of the task.

Dictionary Skills

The groups' relative rates of acquisition on the 10 dictionary skills are summarized in Table 49. Relationships present for each

skill are listed below.

Table 49

Summary: Rate of Acquisition of the Normal and Superior Groups -- Dictionary Skills

A. Significance of Increments During the 7-month Instructional Period

Basal reading skill	R.I.L. Primary	R.I.L. Intermediate
5.1 Identifying alphabetical sequences based on first letter	Significant	Non-significant
5.2 Identifying alphabetical sequences based on third letter	Significant	Significant
5.3 Identifying alphabetical sequences based on first, second, or third letter	Significant	Significant
6.3 Using dictionary guide words	Significant	Significant
7.1 Finding definitions of single entry words	Significant	Significant
7.2 Finding definitions of multiple entry words	Significant	Significant
8.1 Selecting definitions of single entry words	--	Significant
8.2 Selecting definitions of multiple entry words	--	Significant
9.1 Interpreting single pronunciation symbols	Significant	Significant
9.2 Interpreting multiple pronunciation symbols	Significant	Significant

Table 49 (Continued)

B. Relationships Between Groups

Basal reading skill	R.I.L. Primary	R.I.L. Intermediate
5.1 Identifying alphabetical sequences based on first letter	--[a]	--[b]
5.2 Identifying alphabetical sequences based on third letter	N=S	N>S
5.3 Identifying alphabetical sequences based on first, second, or third letter	N<S	N=S
6.3 Using dictionary guide words	N=S	N=S
7.1 Finding definitions of single entry words	N=S	N=S
7.2 Finding definitions of multiple entry words	N=S	N=S
8.1 Selecting definitions of single entry words	--	N=S
8.2 Selecting definitions of multiple entry words	--	N=S
9.1 Interpreting single pronunciation symbols	N=S	N=S
9.2 Interpreting multiple pronunciation symbols	N=S	N<S

[a,b]The groups' rates of acquisition for this skill could not be compared at the primary and intermediate levels on identifying alphabetical sequences based on first letter: the superior group at the primary level approached the task ceiling; at the intermediate level, both groups approached the task ceiling and the subjects did not show significant increments.

Identifying Alphabetical Sequences Based on First Letter. -- The normal and superior subjects at the primary reading instructional level showed significant increments during the 7-month instructional period. The superior group approached the task ceiling for the skill. At the intermediate level, no increment was shown and both groups approached the task ceiling; therefore, the groups could not be compared at either level.

Identifying Alphabetical Sequences Based on Third Letter. -- The normal and superior groups had similar acquisition rates at the primary reading instructional level. At the intermediate instructional level, the normal group showed the faster rate of acquisition in skill in identifying alphabetical sequences based on third letter. The subjects showed significant increments during the 7-month instructional period. Neither group reached the task ceiling.

Identifying Alphabetical Sequences Based on First, Second, or Third Letter. -- The superior group exceeded the normal group, at reading instructional level 3, in rate of acquisition in skill in identifying alphabetical sequences based on first, second, or third letter. The superior and normal groups did not differ in acquisition rates at the intermediate reading instructional level. The subjects at both levels showed significant increments. Neither group reached the ceiling of the task.

Using Dictionary Guide Words. -- At the primary and intermediate reading instructional levels, the normal and superior groups did not differ in rate of acquisition in skill in using dictionary guide words. The subjects showed significant increments during the 7-month instructional period. Neither group reached the task ceiling.

Finding Definitions of Single Entry Words. -- At the primary and intermediate reading instructional levels, the superior and normal groups had similar rates of acquisition in skill in finding definitions of single entry words. The subjects at both levels showed significant increments. Neither group reached the task ceiling.

Finding Definitions of Multiple Entry Words. -- At the primary and intermediate reading instructional levels, the normal and superior groups attained equivalent rates of acquisition, during the instructional period, in skill in finding definitions of multiple entry words. Subjects showed significant increments. Neither group reached the ceiling of the task.

Selecting Definitions of Single Entry Words. -- At the intermediate reading instructional level, the superior and normal groups did not differ in rate of acquisition in skill in selecting definitions of single entry words. (The skill was not taught at the primary reading instructional level.) Subjects at the intermediate level showed significant increments, during the 7-month instructional period. Neither group reached the task ceiling on the skill.

Selecting Definitions of Multiple Entry Words. -- At the intermediate reading instructional level, the normal and superior groups had equivalent rates of acquisition in skill in selecting definitions of multiple entry words. (The skill was not taught at the primary level.) Subjects at the intermediate level showed significant increments during the 7-month instructional period. Neither group reached the task ceiling.

Interpreting Single Pronunciation Symbols. -- At the primary and intermediate reading instructional levels, the normal and superior groups did not differ in rate of acquisition in interpreting single pronunciation symbols. Subjects showed significant increments over the instructional period. Neither group reached the task ceiling.

Interpreting Multiple Pronunciation Symbols. -- At reading instructional level 3, the normal and superior groups showed similar rates of acquisition during the 7-month instructional period. At the intermediate reading instructional level, the superior group exceeded the normal group in rate of acquisition in skill in interpreting multiple pronunciation symbols. Subjects at each level showed significant increments during the 7-month instructional period. Neither group reached the ceiling of the task.

Word Functions Skills

Table 50 consists of the summary of the groups' relative rates of acquisition on the eight word functions skills during the 7-month instructional period. Relationships present for each skill are listed below.

Recognizing Functions of Nouns. -- At the primary and intermediate reading instructional levels, the groups did not differ in rate of acquisition, during the 7-month instructional period, in skill in recognizing the functions of nouns. Subjects at both levels showed significant increments. Neither group reached the task ceiling.

Recognizing Functions of Verbs. -- At both the primary and intermediate levels, the normal and superior groups did not differ in rate of acquisition, during the instructional period, in recognizing functions of verbs. Subjects showed significant increments at both levels. Neither group reached the ceiling of the task.

Recognizing Functions of Adjectives. -- At the primary and intermediate instructional levels, the normal group and the superior group had similar rates of acquisition, during the 7-month instructional period, in recognizing the functions of adjectives. At both levels, the subjects showed significant increments. Neither group reached the ceiling of the task.

Recognizing Functions of Adverbs. -- At the primary and intermediate reading instructional levels, the superior and normal groups did not differ in rate of acquisition, during the instructional period, in recognizing functions of adverbs. Subjects at both levels showed significant increments. Neither group reached the task ceiling.

Table. 30

Summary: Rate of Acquisition of the Normal and Superior Groups -- Word Functions Skills

A. Significance of Increments During the 7-month Instructional Period

Basal reading skill	R.I.L. Primary	R.I.L. Intermediate
14.1 Recognizing functions of nouns	Significant	Significant
14.2 Recognizing functions of verbs	Significant	Significant
14.3 Recognizing functions of adjectives	Significant	Significant
14.4 Recognizing functions of adverbs	Significant	Significant
15.1 Specifying functions of nouns	Significant	Significant
15.2 Specifying functions of verbs	Significant	Significant
15.3 Specifying functions of adjectives	Significant	Significant
15.4 Specifying functions of adverbs	Significant	Significant

B. Relationships Between Groups

Basal reading skill	R.I.L. Primary	R.I.L. Intermediate
14.1 Recognizing functions of nouns	N=S	N=S
14.2 Recognizing functions of verbs	N=S	N=S
14.3 Recognizing functions of adjectives	N=S	N=S
14.4 Recognizing functions of adverbs	N=S	N=S
15.1 Specifying functions of nouns	N=S	N=S
15.2 Specifying functions of verbs	N<S	N=S
15.3 Specifying functions of adjectives	N<S	N=S
15.4 Specifying functions of adverbs	N=S	N<S

Specifying Functions of Nouns. -- At both the primary and intermediate levels, the subjects showed significant increments in specifying functions of nouns during the instructional period. Neither group reached the task ceiling. At both reading instructional levels, the normal and superior groups did not differ in rate of acquisition.

Specifying Functions of Verbs. -- The subjects at both levels showed significant increments on specifying functions of verbs during the instructional period. Neither group reached the task ceiling. At the primary reading instructional level, the superior group exceeded the normal group in rate of acquisition. At the intermediate level, the groups had similar rates of acquisition.

Specifying Functions of Adjectives. -- At both levels, the subjects showed significant increments on specifying functions of adjectives during the 7-month instructional period. Neither group reached the task ceiling. At the primary level, the superior group had the faster acquisition rate. The normal and superior groups showed equivalent rates of acquisition at the intermediate reading instructional level.

Specifying Functions of Adverbs. -- Subjects at both instructional levels showed significant increments in specifying functions of adverbs over the instructional period. Neither group reached the ceiling of the task. The superior and normal groups had equivalent rates of acquisition at the primary reading instructional level. At the intermediate level, the superior group showed faster acquisition.

Comprehension Skills

Data indicating rate of acquisition during the 7-month instructional period were obtained for seven comprehension skills. Table 51 contains a summary of relationships between the groups in terms of rate of acquisition, during the 7-month instructional period, on these seven comprehension skills. Relationships present for each skill are listed below.

Identifying Cause-effect Relationships Directly Stated in Sentences. -- At the primary level, the subjects showed a significant increment during the instructional period and they did not reach the task ceiling. The normal and superior groups did not differ in rate of acquisition on identifying cause-effect relationships directly stated in sentences. At the intermediate level, the subjects did not reach the task ceiling; however, since they did not show a significant increment during the instructional period, they could not be compared on rate of acquisition.

Table 51

Summary: Rate of Acquisition of the Normal and Superior Groups -- Comprehension Skills

A. Significance of Increments During the 7-month Instructional Period

Basal reading skill	R.I.L. Primary	R.I.L. Intermediate
16.1 Identifying cause-effect relationships directly stated in sentences	Significant	Non-significant
17.3 Identifying main ideas directly stated in paragraphs	Significant	Significant
17.1 Identifying main ideas directly stated in stories	Significant	Significant
16.2 Identifying cause-effect relationships implied in sentences	Significant	Significant
17.4 Identifying main ideas implied in paragraphs	Significant	Significant
17.2 Identifying main ideas implied in stories	Significant	Significant
17.5 Identifying details in stories	Significant	Significant

B. Relationships Between Groups

Basal reading skill	R.I.L. Primary	R.I.L. Intermediate
16.1 Identifying cause-effect relationships directly stated in sentences	N=S	--[a]
17.3 Identifying main ideas directly stated in paragraphs	N=S	N=S
17.1 Identifying main ideas directly stated in stories	N=S	N=S
16.2 Identifying cause-effect relationships implied in sentences	N=S	N=S
17.4 Identifying main ideas implied in paragraphs	N=S	N=S

Table 51 (Continued)

Basal reading skill	R.I.L. Primary	R.I.L. Intermediate
17.2 Identifying main ideas implied in stories	N=S	N=S
17.5 Identifying details in stories	N=S	N=S

[a]The groups' rates of acquisition for this skill could not be compared at the intermediate level on identifying cause-effect relationships directly stated in sentences; the subjects did not show significant increments during the instructional period.

Identifying Main Ideas Directly Stated in Paragraphs. -- At the primary and intermediate reading instructional levels, the normal and superior groups did not differ in acquisition rate during the 7-month instructional period in skill in identifying main ideas directly stated in paragraphs. Subjects showed significant increments at both levels. Neither group reached the ceiling of the task.

Identifying Main Ideas Directly Stated in Stories. -- At both reading instructional levels, the superior and normal groups showed equivalent rates of acquisition in skill in identifying main ideas directly stated in stories. Subjects at both levels showed significant increments. Neither group reached the ceiling of the task.

Identifying Cause-effect Relationships Implied in Sentences. -- At the primary and intermediate reading instructional levels, the normal and superior groups did not differ in rate of acquisition in identifying implicitly stated cause-effect relationships in sentences. Subjects showed significant increments during the 7-month instructional period. Neither group reached the task ceiling.

Identifying Main Ideas Implied in Paragraphs. -- At the primary and intermediate reading instructional levels, the groups did not differ in acquisition rate during the 7-month instructional period in identifying implicitly stated main ideas in paragraphs. Subjects at both levels showed significant increments. Neither group reached the task ceiling.

Identifying Main Ideas Implied in Stories. -- At the primary and intermediate reading instructional levels, the normal and superior groups showed similar rates of acquisition during the 7-month instructional period in grasping implicitly stated main ideas in stories. Subjects at both levels showed significant increments. Neither group reached the ceiling of the task.

Identifying Details in Stories. -- The superior and normal groups did not differ in acquisition rate, at the primary and intermediate reading instructional levels, in skill in identifying details in stories. Subjects at both levels showed significant increments during the 7-month instructional period. Neither group reached the task ceiling.

Summary of Results

Level of Acquisition

Identifying Words at Sight

At both the primary and intermediate levels, the superior group exceeded the normal group in level of acquisition on identifying words at sight.

Phonetic Analysis Skills

Primary Level. -- The normal and superior subjects at the primary level did not differ on three of the phonetic analysis skills: associating vowel letters and sounds, identifying syllables in visually presented short words, and identifying syllables in visually presented long words. The normal group did not exceed the superior group on any of the phonetic analysis skills. The superior group exceeded the normal group on six of the phonetic analysis skills: associating consonant letters and sounds, associating consonant digraphs and sounds, associating consonant blends and sounds, using spelling patterns, identifying syllables in orally and visually presented short words, and identifying syllables in orally and visually presented long words.

Intermediate Level. -- The normal and superior subjects at the intermediate level did not differ on three of the phonetic analysis skills: associating vowel letters and sounds, associating consonant letters and sounds, and associating consonant blends and sounds. The normal group did not exceed the superior group on any of the phonetic analysis skills. The superior group exceeded the normal group on six of the phonetic analysis skills: associating consonant digraphs and

sounds, using spelling patterns, identifying syllables in orally and visually presented short words, identifying syllables in visually presented short words, identifying syllables in orally and visually presented long words, and identifying syllables in visually presented long words.

Structural Analysis Skills

Primary Level. -- The normal and superior subjects at the primary level did not differ on four of the structural analysis skills: identifying roots, endings, and suffixes, identifying roots and multiple affixes, locating roots by using root-change rules, and changing roots by using root-change rules. The superior group exceeded the normal group on three of the structural analysis skills: identifying components of compounds, identifying roots and prefixes, and translating contractions.

Intermediate Level. -- The two groups at the intermediate level did not differ on two of the structural analysis skills: identifying roots and multiple affixes and locating roots by using root-change rules. The normal group did not exceed the superior group on any of the structural analysis skills. The superior group exceeded the normal group on five of the structural analysis skills: identifying components of compounds, identifying roots, endings, and suffixes, identifying roots and prefixes, translating contractions, and changing roots by using root-change rules.

Dictionary Skills

Primary Level. -- The two groups at the primary level did not differ in three of the dictionary skills: identifying alphabetical sequences based on first, second, or third letter, using dictionary guide words, and interpreting multiple pronunciation symbols. The normal group did not exceed the superior group on any of the dictionary skills. The superior group exceeded the normal group on five of the dictionary skills: identifying alphabetical sequences based on

first letter, identifying alphabetical sequences based on third letter, finding definitions of single entry words, finding definitions of multiple entry words, and interpreting single pronunciation symbols.

Intermediate Level. -- The two groups at the intermediate level did not differ on three of the dictionary skills: finding definitions of single entry words, finding definitions of multiple entry words, and interpreting multiple pronunciation symbols. The normal group did not exceed the superior group on any of the dictionary skills. The superior group exceeded the normal group on seven of the dictionary skills: identifying alphabetical sequences based on first letter, identifying alphabetical sequences based on third letter, identifying alphabetical sequences based on first, second, or third letter, using dictionary guide words, selecting definitions of single entry words, selecting definitions of multiple entry words, and interpreting single pronunciation symbols.

Word Functions Skills

Primary Level. -- The normal and superior subjects at the primary level did not differ on three of the word functions skills: specifying functions of nouns, specifying functions of verbs, and specifying functions of adjectives. The normal group exceeded the superior group on one of the word functions skills: specifying functions of adverbs. The superior group exceeded the normal group on four of the word functions skills: recognizing functions of nouns, recognizing functions of verbs, recognizing functions of adjectives, and recognizing functions of adverbs.

Intermediate Level. -- The normal and superior subjects at the intermediate level differed on all of the word functions skills, with the superior group exceeding the normal group on every skill.

Comprehension Skills

Primary Level. -- The normal and superior subjects at the primary level did not differ on four of the comprehension skills: identifying

cause-effect relationships directly stated in sentences, interpreting similes, interpreting hyperboles, and interpreting personification. The normal group did not exceed the superior group on any of the comprehension skills. The superior group exceeded the normal group on 11 comprehension skills: identifying main ideas directly stated in paragraphs, identifying main ideas directly stated in stories, identifying cause-effect relationships implied in sentences, identifying main ideas implied in paragraphs, identifying main ideas implied in stories, identifying details in stories, interpreting idioms, interpreting metaphors, predicting outcomes and actions, discriminating between fact and fiction, and discriminating between fact and opinion.

Intermediate Level. -- The normal and superior subjects at the intermediate level differed on all of the comprehension skills but one: interpreting similes. On the remaining 14 comprehension skills the superior group exceeded the normal group.

Rate of Acquisition

Phonetic Analysis Skills

Primary Level. -- The normal and superior subjects at the primary level showed significant increments during the 7-month instructional period on eight of the nine phonetic analysis skills. The skill in which no significant increment was shown was associating vowel letters and sounds. Neither group reached the ceiling of any task.

The normal and superior subjects did not differ on six phonetic analysis skills: associating consonant letters and sounds, associating consonant blends and sounds, using spelling patterns, identifying syllables in orally and visually presented short words, identifying syllables in visually presented short words, and identifying syllables in orally and visually presented long words. The normal group exceeded the superior group on associating consonant digraphs and sounds while the superior group exceeded the normal group on identifying syllables in visually presented long words. The groups' rates of acquisition could not be compared on one task: associating vowel letters and sounds, where the subjects did not show significant increments.

Intermediate Level. -- The subjects at the intermediate level showed significant increments during the 7-month instructional period, on eight of the nine phonetic analysis skills. The skill in which no significant increment was shown was associating vowel letters and sounds. The normal group did not reach the ceiling of any task; the superior group approached the ceiling on one task: identifying syllables in orally and visually presented short words.

The two groups did not differ on seven of the phonetic analysis skills: associating consonant letters and sounds, associating consonant digraphs and sounds, associating consonant blends and sounds, using spelling patterns, identifying syllables in visually presented short words, identifying syllables in orally and visually presented long words, and identifying syllables in visually presented long words. The groups' rates of acquisition could not be compared on two tasks: associating vowel letters and sounds, where the subjects did not show significant increments; and identifying syllables in orally and visually presented short words, where the superior subjects approached the task ceiling.

Structural Analysis Skills

Primary Level. -- The normal and superior subjects at the primary level showed significant increments during the 7-month instructional period on all of the structural analysis skills. Neither group reached the ceiling of any task.

The two groups did not differ on four of the structural analysis skills: identifying roots, endings, and suffixes, identifying roots and prefixes, locating roots by using root-change rules, and changing roots by using root-change rules. The normal group exceeded the superior group on three skills: identifying components of compounds, identifying roots and multiple affixes, and translating contractions. The superior group did not exceed the normal group on any skill.

Intermediate Level. -- The groups showed significant increments at the intermediate level during the 7-month instructional period on all

of the structural analysis skills. The superior and normal groups reached the ceiling on one task: identifying components of compounds.

The two groups did not differ on five of the structural analysis skills: identifying roots, endings, and suffixes, identifying roots and prefixes, identifying roots and multiple affixes, translating contractions, and changing roots by using root-change rules. The normal group exceeded the superior group on one skill: locating roots by using root-change rules. The superior group did not exceed the normal group in acquisition rate on any of the structural analysis skills. The groups' rates of acquisition could not be compared on one skill: identifying components of compounds, where the normal and superior subjects approached the task ceiling.

Dictionary Skills

Primary Level. -- The normal and superior subjects at the primary level showed significant increments during the 7-month instructional period on all of the dictionary skills. The normal group did not reach the task ceiling on any skill; the superior group approached the task ceiling on one skill: identifying alphabetical sequences based on first letter.

The two groups did not differ in acquisition rate on six dictionary skills: identifying alphabetical sequences based on third letter, using dictionary guide words, finding definitions of single entry words, finding definitions of multiple entry words, interpreting single pronunciation symbols, and interpreting multiple pronunciation symbols. The normal group did not exceed the superior group in acquisition rate on any skill. The superior group exceeded the normal group in rate of acquisition on one dictionary skill: identifying alphabetical sequences based on first, second, or third letter. The groups' rates of acquisition could not be compared on identifying alphabetical sequences based on first letter where the superior group at the primary level approached the task ceiling.

Intermediate Level. -- The groups at the intermediate level showed significant increments during the 7-month instructional period on all dictionary skills but one: identifying alphabetical sequences based on first letter. On the same skill, both groups reached the task ceiling. Neither group reached the task ceiling for the remaining nine dictionary skills.

The normal and superior subjects did not differ in seven of the dictionary skills: identifying alphabetical sequences based on first, second, or third letter, using dictionary guide words, finding definitions of single entry words, finding definitions of multiple entry words, selecting definitions of single entry words, selecting definitions of multiple entry words, and interpreting single pronunciation symbols. The normal group exceeded the superior group in acquisition rate on one skill: identifying alphabetical sequences based on third letter. The superior group exceeded the normal group in acquisition rate on one skill: interpreting multiple pronunciation symbols. The groups' rates of acquisition could not be compared on one skill: identifying alphabetical sequences based on first letter, where the normal and superior subjects approached the task ceiling and the subjects did not show significant increments.

Word Functions Skills

Primary Level. -- The normal and superior subjects at the primary level showed significant increments during the 7-month instructional period on all eight of the word functions skills. Neither group reached the task ceiling for any skill.

The two groups did not differ in acquisition rate on six of the word functions skills: recognizing functions of nouns, recognizing functions of verbs, recognizing functions of adjectives, recognizing functions of adverbs, specifying functions of nouns, and specifying functions of adverbs. The normal group did not exceed the superior group on any of the word functions skills. The superior group exceeded the normal group in acquisition rate on two skills: specifying functions of verbs and specifying functions of adjectives.

Intermediate Level. -- The normal and superior subjects at the intermediate level showed significant increments during the 7-month instructional period on all of the word functions skills. Neither group reached the task ceiling for any skill.

The two groups did not differ in rate of acquisition on seven word functions skills: recognizing functions of nouns, recognizing functions of verbs, recognizing functions of adjectives, recognizing functions of adverbs, specifying functions of nouns, specifying functions of verbs, and specifying functions of adjectives. The superior group exceeded the normal group on the remaining word functions skills: specifying functions of adverbs.

Comprehension Skills

Primary Level. -- The normal and superior subjects at the primary level showed significant increments during the 7-month instructional period on all of the comprehension skills. Neither group reached the task ceiling for any skill.

The two groups did not differ in acquisition rate on any of the seven comprehension skills: identifying cause-effect relationships directly stated in sentences, identifying main ideas directly stated in paragraphs, identifying main ideas directly stated in stories, identifying cause-effect relationships implied in sentences, identifying main ideas implied in paragraphs, identifying main ideas implied in stories, and identifying details in stories.

Intermediate Level. -- The normal and superior subjects at the intermediate level showed significant increments during the 7-month instructional period on all comprehension skills but one: identifying cause-effect relationships directly stated in sentences. Neither group reached the task ceiling for any of the comprehension skills.

The two groups did not differ in acquisition rate on six comprehension skills: identifying main ideas directly stated in paragraphs, identifying main ideas directly stated in stories, identifying cause-effect relationships implied in sentences, identifying main ideas implied in paragraphs, identifying main ideas implied in stories, and

identifying details in stories. The groups' rates of acquisition could not be compared on one skill: identifying cause-effect relationships directly stated in sentences, where the subjects did not show a significant increment.

CHAPTER 8

DISCUSSION, LIMITATIONS, AND CONCLUSIONS

The three major sections in this chapter are devoted to the following: discussion of issues which should be weighed in considering results of the investigation, limitations or specifications of conditions to which conclusions must be restricted, and conclusions relevant to research questions subsumed by the five research objectives. The magnitude and complexity of the project are such that the presentations in the discussion, limitations, and conclusions sections cannot be exhaustive because of limitations of space and time. However, the investigators intend subsequently to prepare additional materials related to such topics as further interpretations of the data, pedagogical implications, and so on.

Discussion

Several issues should be weighed in considering results of the present study. These issues pertain to possibilities of Type G and Type R errors, possibilities of Type S errors, and problems in interpreting differences. These issues are discussed below. Background sources for this discussion include Bereiter (1963), Bloom (1963), Campbell (1957), Campbell and Stanley (1963), Dubois (1960), Edwards (1963), Forehand (1962), Lindquist (1953), McKeachie (1962), Quay (1963), Underwood (1957), and Williams (1959), among others.

Possibilities of Type G and Type R Errors

There were possibilities that the results of the investigation could be biased or contaminated by a combination of Type G and Type R errors (Lindquist, 1953). That is, there could have been biases related to differences among teachers, schools, and school systems.

The present project involved subjects classified according to reading instructional level and intelligence level. Subjects within cells formed by the overlapping of these variables were selected from several classrooms in three school systems. The source of trouble here was the possibility that certain cells or combinations of cells would consist of pupils from classes which varied in some systematic way in critical features: e.g., the nature of the curriculum to which pupils were exposed in areas other than reading, the competencies of the teachers in reading instruction, the procedures for teaching reading, the procedures for administering the tests of the basal reading skills, and so on.

In the present study, steps were taken to minimize effects of such sources of bias. Describing all of these steps would require a prohibitive amount of space here. Consequently, for purposes of illustration, several examples of steps which were taken are cited below. Subjects in a given cell formed by IQ and reading instructional level were selected from more than one school district, from more than one school, and from more than one classroom. Or, stated in reverse, each classroom contained subjects from more than one cell formed by the overlapping of IQ level and reading instructional level. One advantage of working with 44 classes was that the numbers of teachers and pupils available made this procedure possible. Teachers were recommended for participation in the project by administrators and supervisors who were familiar with the teachers' work. Participants were certified teachers. In meetings with teachers, the investigators repeatedly stressed the need to teach according to the guidebooks in the Scott, Foresman New Basic Readers series. The investigators gave the teachers in-service work on teaching reading. Similarly, the teachers were given information about the nature and requirements of the project and the various steps in data collection. In addition to orientation in data collection, the teachers were given identical sets of written material specifying procedures for data collection. To standardize data collection further (as well as to minimize the burden on the teachers), audio tapes which contained test directions were prepared by

the investigators and used by the teachers in administering tests to pupils. Attention was given to controlling such factors as timing in the tests *per se*, the time of day the tests were given, and the dates on which the tests were given. As stated previously, these activities are examples of steps which the investigators took to minimize the possibility that results would be confounded by differential operation of extraneous factors related to schools, teachers, *etc*. Also, at the end of the data collection phase of the project, teachers supplied the investigators written descriptions of their reading programs as well as other information about how they worked with pupils, their own reactions, and their pupils' reactions to the Scott, Foresman New Basic Readers program, and so on. Considering all of these procedures, and information supplied by teachers in their written reports, the investigators rejected the possibility that the results of the present study were biased systematically by such extraneous factors as the Type G and Type R errors cited above.

Possibilities of Type S Errors

There were several Type S errors (Lindquist, 1953) that possibly could have been present. For example, there might have been extraneous factors affecting retarded subjects but not normal or superior subjects. That is, there could have been differences among subjects with respect to such variables as the following: degree of interest in the contents of the textbooks and other reading instructional materials; expectations of and reactions to frustration and failure; achievement in relation to expectations; attrition; and rate of maturation. Factors like these, if they had operated, could have affected results of the investigation.

Motivational factors are a possible source of bias which must be taken into account in research like this. One motivational factor was subjects' interests in the stories and other contents of the reading instructional materials. Retarded and normal subjects who are equated on MA differ in CA. Generally, interests covary with CA.

There was a possibility that the retarded subjects would not find the contents of the "Sixties Edition" of the Scott, Foresman New Basic Readers interesting enough to hold their attention so that they would profit from the instructional program. However, the reading instructional materials which were used in the project consisted of stories, poems, and articles about a variety of topics which appealed to many interests across a considerable age range. The investigators questioned teachers of retarded subjects about their pupils' responses to the instructional materials. Teachers reported that most pupils appeared to find the reading materials interesting and generally appeared to respond positively. Another source of evidence related to the possible negative effect of differential interest-level is the pattern of results obtained in the project. If the retarded subjects did not respond to the instructional materials, it could be expected that they would not show progress over the 7-month instructional period or would show less progress than the normal subjects. The retarded subjects did show progress during the 7-month instructional period. They showed a slower rate of acquisition than the normal subjects in some skills at both the primary and the intermediate levels; however, on most skills, they did not differ from the normal subjects in rate of acquisition. On the basis of these considerations, the investigators rejected the possibility that differential interests in the reading materials operated systematically to confound the results.

Another possible problem was that the retarded subjects, because of previous academic failures, might show negative reactions to the tests used in the project. Cromwell (1963) and Heber (1964) reviewed theories and research on motivational characteristics of the retarded. One area of study pertained to how expectations of and reactions to failure and frustration affect retarded subjects' performance. Most investigators have reported that retarded and non-retarded subjects did not respond differentially to exposure to failure and other types of frustration in research situations involving verbal cognitive tasks. In addition, steps were taken in the present project to minimize stress for all subjects. The reading instructional program was part of the

total school curriculum; the tests were given as a part of the reading instructional program. In the directions for each test, comments were made to the subjects that they should not expect to know all answers because the tests were such that no pupil could expect a perfect score. In addition, the teachers were cautioned to watch for signs of reactions to stress and to reassure the pupils as often as necessary. Teachers did not report that pupils were particularly threatened by the tests. Also, the pattern of results did not suggest any generalized deleterious effects of failure and frustration reactions. That is, on some skills the subjects did not differ while on some skills the normal exceeded the retarded. It would seem that if subjects' performance were being affected deleteriously, then this negative effect would be consistent. Consequently, on the basis of all of these considerations, the investigators rejected the possibility that differential reactions to stress operated systematically to bias results of the study.

Dunn (1954) described a design problem which may be associated with biased results in a study of retarded pupils' rates of acquisition in reading. (This problem also pertained to normal and superior pupils' rates of acquisition.) That is, pupils selected as subjects might not be achieving at reading instructional levels which are as high as they are capable of achieving; and when such subjects are given systematic reading instruction, they may show spuriously rapid progress. In the present project, the retarded subjects were equated on MA and general reading achievement level with normal subjects who had reading achievement levels considered appropriate for pupils at their CA levels and thus their MA levels. Similarly, subjects were taught at reading instructional levels commensurate with their reading achievement levels. Therefore, the present investigators did not consider that problems of underachievement operated systematically to bias results reflecting the subjects' rates of acquisition. . . .

Another problem which had to be considered was attrition. Fifty-two pupils were lost through attrition. Of these 52 pupils, 35 moved to non-participating schools or school systems. These 35 pupils were distributed over the reading instructional levels and intelligence

levels. When the total of 1163 pupils was considered, loss of 35 pupils through moving away from the schools was considered negligible and thus not a systematic source of bias.

A more serious problem was the loss of 17 retarded pupils at the intermediate reading instructional level. Eight pupils enrolled in vocational rehabilitation programs and nine pupils withdrew from school. Associated with this loss was the possibility that not as many capable retarded pupils at the intermediate reading instructional level were available for selection in the beginning; i.e., there were opportunities for some of the older, capable mentally retarded individuals to be enrolled in vocational rehabilitation programs or successfully employed in jobs. There was no way to examine this possibility to see if it were so. However, the point is this: It could have happened that the retarded subjects at the intermediate reading instructional level were less capable pupils. On the other hand, the retarded pupils who were employed as subjects at the intermediate level achieved at reading instructional levels 4 and 5 on an independent measure of general reading achievement level; that is, the subjects demonstrated their capability at the required level in the particular aspect of behavior being studied, reading. Therefore, the investigators considered that the results of the study were not likely to be contaminated systematically by differential attrition or a selection bias; however, generalizations must be limited to retarded subjects at reading instructional levels 4 and 5 who are still in school.

The possibility of a subject-selection X maturation interaction (Campbell and Stanley, 1963) had to be watched very carefully. Studying rate of acquisition required a repeated-measurements-over-time procedure. At the beginning of the instructional period, retarded and normal subjects were equated on MA. Nevertheless, by definition, a differential rate of MA increments occurs in individuals who have different IQs; over an extended period of time, effects of differences in rate of MA increments could cummulate sufficiently to bias comparisons of changes in reading achievement over a period of time. In the phases of the present study which involved comparisons of two groups in

terms of rates of acquisition, the time-interval for assessing rate of acquisition was limited to seven months. One reason for this limitation was to minimize the possibility that such a subject-selection X maturation interaction would operate to bias the results. The investigators expected that within this restricted time-period the projected differences in MA would not become large enough to operate differentially to bias the results systematically; that is, the differential rate of mental growth would not have time to confound the observed relationships. The reasonableness of this expectation was supported by the observation that while the retarded subjects showed slower rates of acquisition in some reading skills, they did not differ from the normal subjects in other skills. In addition, normal and superior subjects who also had unequal rates of MA increments did not differ consistently in rate of acquisition of reading skills.

Problems in Interpreting Differences

In interpreting results of studies like the present investigation, one problem is the manner in which differences between descriptive statistics should be interpreted; more directly: What do the differences between statistics indicate? This problem pertained to statistics in all parts of the investigation. In objective 1, encompassing sequences, the problem pertained to differences between a_j values, q^2 values, and the observed and reproduced matrices. In objective 2, encompassing processes, the problem essentially pertained to differences between multiple correlations and zero as well as differences between any two multiple correlations, and to differences between partial regression coefficients and zero as well as differences between any two standard partial regression coefficients. In objective 3, encompassing trends in achievement over reading instructional levels, the problem essentially pertained to differences between regression coefficients and zero. In objectives 4 and 5, encompassing levels of acquisition and rates of acquisition, the problem respectively pertained to differences between means and, in essence, to differences

between regression coefficients and zero as well as differences between any two regression coefficients. Aspects of this problem, the interpretation of differences, are discussed below. For the sake of brevity, the discussion is restricted to some issues in interpreting differences between means. Considerations relevant to interpreting differences between means illustrate some considerations in interpreting differences between other statistics involved in the analyses of sequences, processes, and trends in achievement over reading instructional levels as well as a 7-month instructional period; although, in these latter cases, there are additional issues pertaining to psychological scaling and to regression analysis.

When a t ratio or F ratio occurs at a probability level which is satisfactory in terms of the criterion for significance which an investigator has specified, he or she may reject the null hypothesis and comment, in colloquial terms, about significant differences between or among means. A next step is to interpret the differences. One of several problems to be found in interpreting differences between means is this: Given a significant difference, is it important or meaningful? This problem is discussed as statistical versus practical significance by such writers as Edwards (1963) and Williams (1959).

Deciding on the importance of a difference between means is a complex activity. Statistical significance per se does not indicate the meaningfulness or importance of a difference. An investigator may use procedures which may, within limits, increase precision of statistical tests to such an extent that relatively small variations in means will be statistically significant. For example, among the ways to increase precision of statistical tests is to increase sample sizes thus influencing not only standard deviations but also standard errors of differences. Therefore, when the investigator is deciding on numbers of subjects, one of his concerns is to specify sample sizes which will lead to neither too little nor too much precision. If the investigator can know the standard deviations of his measures, he can use techniques like those described by Snedecor (1956) to determine appropriate sample sizes. However, in studies like the present one

where previous information about standard deviations is not available, the investigator has no such recourse.

Just as the statistical significance of a difference does not indicate practical significance, neither does the absolute magnitude of a difference between means indicate importance. When constructing instruments, an investigator may use procedures which influence sizes of differences. One such procedure is to vary the number of items for each element in a test. For example, take a situation in which two groups of subjects differ in their knowledge of two elements in a test; one group has mastered the two elements and one group has not. Assume the test has satisfactory reliability and thus a small error of measurement. The magnitude of the observed difference between the groups' means should correspond with the number of items used to measure the two items; generally, the observed difference should increase as the number of items is increased. Consequently, a crucial factor is not the absolute size of the point spread; instead, a crucial factor is how many items are used to sample each element.

Even accepting these and similar qualifications about statistical significance and absolute sizes of differences, a person still cannot answer the question: Is a given difference important or meaningful? Instead, the question must be recast: Is the difference important or meaningful for <u>purpose</u> <u>X</u>? That is, the importance or meaningfulness of a difference depends on a person's interest, the purpose for which he or she is considering the difference as evidence.

For example, consider basal reading skill 4.2, identifying prefixes. One prefix was selected from reading instructional levels 2, 3, 4, 5, and 6, respectively. Two test items were used to sample each prefix. Consequently, two points on the subtest corresponded, on the average, to approximately one prefix.

1. Suppose a person is interested in differences between the specific number of prefixes which groups of pupils know. A difference of two points between means would be important to him in the sense that it indicates that the groups vary by knowledge of approximately one prefix, on the average.

2. Suppose a person is interested not only in differences between the specific number of prefixes which pupils have mastered but also in differences in the particular prefixes which pupils know. Differences between means would be important only as a starting point. His next step would be to classify and compare differences in pupils' responses to each prefix sampled in the test.

3. Suppose a person is interested in whether groups differ in knowledge prerequisite for using structural analysis skills in word recognition. A difference in two points, or an average of approximately one prefix, may not be too important to him. That is, the pupils would not vary too much in one kind of prerequisite knowledge for using structural analysis skills with words; the specific importance of the variation would be influenced by how many times prefixes are involved in the words the pupils have to analyze.

4. Suppose a person is interested in trends in behavior. The criterion of meaningfulness or importance then would not be differences between the specific number of prefixes pupils know, the particular prefixes which they know, or their preparedness for using elements in the reading act. Instead, the criterion would be the patterns of relationships over a number of skills. For example, consider data obtained in the present study in the comparisons of levels of acquisition of the retarded and normal subjects and of the normal and superior subjects. In some comparisons, the differences between levels of acquisition were not statistically significant. In cases where differences were statistically significant, some differences were small and some were large. Several trends were apparent in the data. These trends were important in themselves. For illustration, two of these trends are listed below.

   a. Generally, the less intelligent subjects did not exceed the more intelligent subjects in level of acquisition; either the groups had similar levels of acquisition or the more intelligent subjects had the higher levels of acquisition. This trend was present in the comparisons of the retarded and normal subjects and in the comparisons of the normal and superior subjects. (In each set of comparisons, there was only one exception where the less intelligent subjects had the higher level of acquisition. These exceptions occurred at the primary level: retarded subjects exceeded normal subjects in interpreting multiple pronunciation symbols; normal subjects exceeded superior subjects in specifying functions of adverbs.)

b. The groups who differed in intelligence were more often similar in level of acquisition at the primary level than at the intermediate level; that is, the levels of acquisition of groups separated or became more different as the subjects became more advanced in instructional level. This pattern was present in the comparisons of the retarded and normal subjects and in the comparisons of the normal and superior subjects.

In summary, then, interpretation of differences is not arbitrary. Instead, one must consider the purpose for which he or she is seeking evidence in conjunction with factors like the nature of the instruments for assessing behavior and the scores produced by these instruments. Data obtained in the present study may be interpreted from several points of view. The present investigators plan further work on matters pertaining to interpretation. That is, they intend to prepare additional reports in which they will interpret results of the present study from several points of view like those enumerated above: e.g., interpretation of data in terms of the number and nature of specific elements, interpretation of data in terms of pedagogical implications, and interpretation of data in terms of patterns of relationships. Preparing these additional interpretive materials will require further work and this work is in progress. In the meantime, the reader may wish to make his own interpretation, i.e., to consider the evidence from the point of view of his own interests. The material in the appendices should be helpful. For example, a content description is presented for each task; these content descriptions portray, among other things, the elements measured by a test or subtest for a skill, the reading instructional levels where the elements were introduced, the test items used to measure the elements, and so on.

Limitations

The factors considered in this section are among those which restrict the generality of relationships observed in the present investigation, i.e., the external validity (Campbell and Stanley, 1963).

In sum, generalizations emanating from the results of the investigation are specifically restricted to conditions similar to those under which the results were obtained. For example, special consideration must be given to such factors as the population sampled, the participating school personnel, the reading instructional program, the resources available to the teachers, the reading instructional levels at which pupils were taught, the particular reading skills in the chosen categories, the intellectual processes, the time periods, the instruments or tests, and the particular dimension used for identifying sequences among skills. Wider generalization will require further research.

Generalizations are limited to populations similar to those sampled. The subjects were pupils taught at reading instructional levels 2, 3, 4, and 5. Whether similar results would be present at other reading instructional levels would need further investigation. Also, the retarded and normal subjects were equated on MA and an independent measure of general reading achievement level; they were taught at the same reading instructional levels. Different results might be obtained if subjects were equated on any combination of these variables but not all three. The normal and superior subjects were equated on CA; they differed on MA and reading instructional level. It is possible that different relationships would be observed in a study of normal and superior subjects who are equated for MA, general reading achievement level, and reading instructional level, or some combination of these three variables. Such a sampling plan could not be used in the present project. A study should be conducted with pupils who have been paced in reading in a way which would be appropriate for such comparisons to be made.

Another point to consider in limiting generalizations is the nature of the schools in which the project was conducted, more specifically, the characteristics of the administrators and teachers. The project involved a great deal of work with 3 school systems, 17 schools, 1163 pupils, 44 classes, and 39 teachers who taught reading to the subjects. Participating also in the pilot-testing were additional

personnel and another school system. Considerable cooperation was required. It follows that administrators and teachers who would participate in such an endeavor would be, in Quay's (1963) words, "the most progressive ... those who wish to improve their program." That is, it is reasonable to expect that, other factors being equal, such people probably provide relatively better educational programs for pupils. The results of the present study are limited to school systems which are similar in terms of the characteristics of school personnel.

Generalizations must be limited to the Scott, Foresman New Basic Readers program, to similar reading instructional programs, or to similar parts of other reading instructional programs. Different relationships might result with reading instructional programs which differ in the particular reading skills taught, the extent to which the skills are taught, the order in which the skills are taught, the rate at which skills are taught, and the methods and materials used in teaching.

A related limitation is associated with the resources available to teachers for their reading instructional program. The teachers in the present project were furnished the materials used in the Scott, Foresman New Basic Readers program at the reading instructional levels they taught. Similarly, they were given in-service work in reading instruction by one of the investigators, who is a specialist in reading instruction, as well as by outside consultants. One of the consultants was the regional consultant for Scott, Foresman and Company; the other outside consultant was the senior author for the Scott, Foresman New Basic Readers series. Results of the investigation, therefore, are limited to teaching situations in which a number of resources are available to the teachers.

Generalizations are limited to the categories of reading skills, the specific reading skills, and the facets of the reading skills sampled. Six categories of reading skills were examined. Only a limited number of skills in a given category was assessed. Also, only certain facets of the skills were examined. Further study is needed

for other categories of skills and other skills in each category as well as other facets of the skills which were assessed in the present project.

Generalizations are limited to the categories of intellectual processes, the specific intellectual processes, and the facets of intellectual processes examined. Four categories of cognitive behavior were sampled with four intellectual processes. Other categories of cognitive behavior, and within these categories, other specific intellectual processes, probably are related to reading achievement. Sets of additional intellectual processes need to be examined. Related to this, the addition of intellectual processes to the set examined in the present project or the use of different procedures for measuring the intellectual processes studied could affect the absolute extent to which particular variables contributed to explaining the variance in any one reading skill. Possibly, such additions and differences could affect the relative extent to which the variables contributed. That is, further study is needed with intellectual processes which might intercorrelate differently with the intellectual processes in a set as well as with the reading skills.

Generalizations are restricted to the reading skills and intellectual processes as they were measured with the types of instruments used. For example, with the exception of identifying words at sight and the independent measure of general reading achievement used in selection of subjects, the reading skills and processes were assessed with pencil and paper tests. If other test models and procedures had been used, varying relationships might have been observed.

Generalizations about sequences are restricted to order relationships among the sets of skills considered in the several categories. Consideration of more homogeneous sets of skills in the categories could yield different indices of goodness of fit. Similarly, addition of other skills or variations in the facets of the skills measured could affect the place of a particular skill in a given hierarchy as well as the indices of goodness of fit. A related restriction is that

the skills were ordered according to one criterion, complexity. Complexity was defined in terms of degree of inclusiveness. Different relationships might have been observed if another criterion or if combinations of criteria had been used in ordering the skills or if complexity had been defined differently.

Generalizations pertinent to rate of acquisition are restricted to relationships which may be observed when behavior is sampled only two times. Rate of acquisition might have been described more precisely if more measurements could have been obtained. However, two problems existed. One problem was relevant to the factor labeled as testing by Campbell and Stanley (1963). That is, more frequent administration of the tests could have led to biases related to memory, practice effect, and so on. Another problem related to logistics. More frequent testing would have put an undue burden on the teachers and would have required an excessive amount of time to be taken from teaching reading to the pupils. The logistical problem could have been minimized if a smaller number of basal reading skills had been assessed. However, since the confounding effects of testing still would have operated, or would have been increased with fewer tests, there was no reason to restrict the range of skills examined.

Generalizations about rates of acquisition also must be limited to about a 7-month time-interval. By choice, the investigators would have studied relative rates of acquisition over a longer period of time. However, the time-period had to be limited to seven months to preclude at least two possible sources of bias. One possible source was the subject-selection X maturation interaction discussed previously. Another possible source of bias which had to be considered was a problem which Campbell and Stanley (1963) labeled as history. This problem could have operated in this way. Extending the time-period would have involved test administration after summer vacation. During this interval out of the regular school program, two factors could have operated. First, forgetting, and possibly differential forgetting, might have occurred. Second, pupils could have had varying kinds of experiences during the summer which might have affected their reading skills differentially.

Conclusions

The purpose of the present investigation was to study achievement in basal reading skills by mentally handicapped, intellectually normal, and intellectually superior pupils taught in a basal reading program at reading instructional levels 2, 3, 4, and 5. Following from this purpose were five research objectives which subsumed more specific research questions. The project activities consisted of collecting and processing data pertinent to these questions as they applied to six categories of basal reading skills encompassing 50 skills. Broad generalizations germane to the research questions are listed below. More specific relationships are listed in Chapters 3, 4, 5, 6, 7, and 9. These more specific relationships are recapitulated in outline form in Figures 20 and 21. (These figures are placed in the text after the list of generalizations.)

1. Sequences Among Basal Reading Skills

The first research objective was to identify sequences basal reading skills in five categories: phonetic analysis, structural analysis, dictionary, word functions, and comprehension.

a. Expected Sequences Among Basal Reading Skills. -- In each category except word functions, a majority of the skills can be ordered along a dimension of complexity when complexity is defined as degree of inclusiveness.

b. Goodness of Fit of the Simplex Model. -- The simplex model fits fairly well sets of data describing a majority of skills in each category (except word functions) when these skills are ordered on the basis of the criterion, level of complexity.

Figures 20 and 21 portray more specific relationships pertinent to sequences among basal reading skills.

2. Intellectual Processes Related to Basal Reading Skills

The second research objective was to examine intellectual processes related to achievement in selected basal reading skills.

a. Identification of Processes. -- Associative memory, conceptualization, verbal meaning, and reasoning are related to achievement in the respective basal reading skills. Associative memory is related to achievement in about 33% of the skills; the remaining intellectual processes are related to achievement in over 80% of the skills.

b. Extent of Relationships. -- In combination, the four intellectual processes contribute to explaining from 1 1/2% to 48% of the variance in the respective basal reading skills. The contributions of single intellectual processes range from no contribution to about 18% for the respective basal reading skills.

c. Relative Contribution. -- Associative memory contributes least to explaining variance in the several reading skills. The relative contributions of conceptualization, verbal meaning, and reasoning vary among the basal reading skills.

d. Differences Among Skills. -- The intellectual processes related to achievement differ among basal reading skills; these differences are in the frequency with which the intellectual processes contribute to explaining variance in reading skills as well as in the extent to which the intellectual processes contribute.

Figures 20 and 21 portray more specific relationships pertinent to intellectual processes related to basal reading skills.

3. Trends in Achievement of Basal Reading Skills Over Reading Instructional Levels

The third research objective was to describe trends in achievement of basal reading skills over reading instructional levels 2, 3, 4, and 5. The retarded, normal, and superior groups were considered separately.

a. Presence of a Trend. -- Within each group, for a majority of basal reading skills, there is a significant trend in the means at reading instructional levels 2, 3, 4, and 5.

b. Nature of the Trend. -- Within each group, the trends are linear for a majority of basal reading skills although quadratic and cubic trends do occur.

Figures 20 and 21 portray more specific relationships pertinent to trends in achievement of basal reading skills over reading instructional levels.

4. Intellectually Retarded and Normal Groups' Achievement in the Basal Reading Skills

The fourth research objective was to compare retarded and normal groups' achievement in the basal reading skills. The research questions pertained to retarded and normal groups who are equated on MA and general reading achievement levels and who are taught at the same reading instructional levels.

a. Level of Acquisition in the Basal Reading Skills. -- The retarded and normal groups show both similarities and differences in levels of acquisition in the basal reading skills at the beginning of the 7-month instructional period. The frequencies of the similarities and differences vary with the nature of the basal reading skills and the reading instructional level, primary and intermediate.

b. Rate of Acquisition in the Basal Reading Skills. -- In the majority of skills, the retarded and normal groups do not differ in rate of acquisition during the 7-month instructional period. The differences in rate of acquisition which do occur vary, to some extent, with the nature of the basal reading skills and the reading instructional level, primary and intermediate.

Figure 20 portrays more specific relationships apparent in intellectually retarded and normal groups' achievement in the basal reading skills.

5. Intellectually Normal and Superior Groups' Achievement in the Basal Reading Skills

The fifth research objective was to compare normal and superior groups' achievement in the basal reading skills. The research questions pertained to normal and superior groups who are equated on CA level and who are taught at the same reading instructional levels.

a. Level of Acquisition in the Basal Reading Skills. -- The normal and superior groups show both similarities and differences in levels of acquisition in the basal reading skills at the beginning of the 7-month instructional period. The frequencies of the similarities and differences vary with the reading instructional level, primary and intermediate.

b. Rate of Acquisition in the Basal Reading Skills. -- In the majority of skills, the normal and superior groups do not differ in rate of acquisition during the 7-month instructional period. The differences in rate of acquisition

which do occur do not appear to be related especially to the nature of the reading skill or the reading instructional level.

Figure 21 portrays more specific relationships apparent in intellectually normal and superior groups' achievement in the basal reading skills.

As stated previously, Figures 20 and 21 contain, in outline form, a recapitulation of relationships germane to the research questions subsumed by the five research objectives. The figures are organized so the relationships pertinent to the several objectives are in parallel columns. For mechanical reasons, relationships for all objectives could not be listed in the same figure. Figure 20 contains the relationships for objective 1 (sequences), objective 2 (processes), the relationships for objective 3 (trends over instructional levels) germane to the retarded and normal groups, and objective 4 (intellectually retarded and normal groups' achievement). Figure 21 portrays relationships for objectives 1 and 2 again in conjunction with the relationships for objective 3 pertaining to the normal and superior groups, and objective 5 (intellectually normal and superior groups' achievement). Inspection of appropriate columns in Figures 20 and 21 reveals relationships for a given objective. Comparisons of data between columns within the figures or between the figures reveal interrelationships among data pertinent to the several objectives.

Several mechanical notes are presented here because there is not sufficient space in the figures for footnotes. These mechanical notes refer to abbreviations and omissions. Definitions of terms and reasons for omissions are presented in previous chapters where appropriate.

1. Several abbreviations are used in the figures. The labels for the intellectual processes are abbreviated to AM (associative memory), C (conceptualization), VM (verbal meaning), R (reasoning); NS indicates that a given intellectual process did not contribute significantly to explaining variation in a particular reading skill. R.I.L. symbolizes reading instructional level. The labels for the groups are abbreviated to R (retarded), N (normal), and S (superior). The labels for the trends are abbreviated to L (linear), Q (quadratic), and C (cubic); NS symbolizes that, for a given reading skill, no significant trend was present

in the means at the several reading instructional levels.

2. In the listing of information germane to objectives 4 and 5, the three possible relationships are used as column headings. Then, an (X) is used to indicate which of the three relationships is present for a particular reading skill.

3. Some cells in the figures contain asterisks indicating omissions. Specifically, the omissions were the following.

   a. Identifying words at sight was not included in the analyses of sequences and processes.

   b. Selecting definitions of single entry words and selecting definitions of multiple entry words were not included in analyses at the primary reading instructional level.

   c. In the arrangements of skills within categories in hierarchical sequences, the following skills were excluded from the respective categories: structural analysis skills -- translating contractions; dictionary skills -- interpreting single pronunciation symbols and interpreting multiple pronunciation symbols; comprehension skills -- interpreting similes, interpreting idioms, interpreting hyperboles, interpreting personification, interpreting metaphors, predicting outcomes and actions, discriminating between fact and fiction, and discriminating between fact and opinion.

   d. Analyses of rate of acquisition were not pertinent for identifying words at sight, interpreting similes, interpreting idioms, interpreting hyperboles, interpreting personification, interpreting metaphors, predicting outcomes and actions, discriminating between fact and fiction, and discriminating between fact and opinion.

   e. Because subjects did not show a significant increment over the 7-month instructional period or because subjects approached the task ceilings, the groups' rates of acquisition were not comparable in the following cases: normal and retarded groups at the intermediate level -- identifying alphabetical sequences based on first letter, interpreting multiple pronunciation symbols, specifying functions of verbs, specifying functions of adverbs, and identifying cause-effect relationships directly stated in sentences; normal and superior groups at the primary level -- associating vowel letters and sounds and identifying alphabetical sequences based on first letter;

normal and superior groups at the intermediate level -- associating vowel letters and sounds, identifying alphabetical sequences based on first letter, and identifying cause-effect relationships directly stated in sentences.

Figure 20

Relationships: Objectives One, Two, Three, and Four -- Comparisons Involving the Retarded and Normal Groups

Note: Explanations for abbreviations and omissions (*) are in the text.

Category of basal reading skills	Objective 1 Skills arranged by expected sequence within categories	Objective 2 Intellectual processes % contribution AM	C	VM	R
Identifying words at sight	18.1 Identifying words at sight	*	*	*	*
Phonetic analysis skills $q^2 = .8653$	10.1 Associating vowel letters and sounds	NS	NS	NS	2.68
	10.2 Associating consonant letters and sounds	NS	1.55	NS	NS
	10.3 Associating consonant digraphs and sounds	NS	5.59	1.97	2.38
	10.8 Associating consonant blends and sounds	NS	4.23	NS	NS
	13.1 Identifying syllables in orally and visually presented short words	NS	10.10	NS	9.31
	12.1 Identifying Syllables in visually presented short words	NS	6.70	5.33	9.70
	13.2 Identifying syllables in orally and visually presented long words	NS	11.93	3.43	13.99
	12.2 Identifying syllables in visually presented long words	NS	7.58	4.95	17.64
	11.3 Using spelling patterns	NS	13.76	5.39	14.74
Structural analysis skills	3.1 Identifying components of compounds	1.93	7.01	10.27	5.13
	4.1 Identifying roots, endings, and suffixes	4.52	7.52	15.17	14.76

Figure 20 (Continued)

Note: Explanations for abbreviations and omissions (*) are in the text.

Objective 3 Trends over R.I.L.		Objective 4 -- Retarded and Normal Groups											
		Level of Acquisition						Rate of Acquisition					
		Primary			Intermediate			Primary			Intermediate		
R	N	N=R	N>R	N<R	N=R	N>R	N<R	N=R	N>R	N<R	N=R	N>R	N<R
L	L	x			x			*	*	*	*	*	*
NS	NS	x			x			x			x		
NS	NS	x			x			x			x		
NS	C	x			x			x			x		
NS	L	x				x		x			x		
NS	L	x				x		x			x		
L	L	x				x		x			x		
NS	Q		x			x		x			x		
NS	L		x			x		x			x		
L	L		x			x			x		x		
L	L	x			x				x			x	
L	C	x			x			x				x	

Figure 20 (Continued)

Note: Explanations for abbreviations and omissions (*) are in the text.

Category of basal reading skills	Objective 1 Skills arranged by expected sequence within categories	Objective 2 Intellectual processes % contribution AM	C	VM	R
Structural analysis skills (Continued) $q^2 = .8943$	4.2 Identifying roots and prefixes	3.31	13.64	15.07	14.61
	4.4 Identifying roots and multiple affixes	2.88	10.13	8.03	7.65
	4.3 Locating roots by using root-change rules	2.26	20.75	8.79	16.43
	1.1 Changing roots by using root-change rules	2.53	17.44	6.88	10.12
*	2.1 Translating contractions	NS	17.10	NS	14.41
Dictionary skills $q^2 = .8722$	5.1 Identifying alphabetical sequences based on first letter	2.27	9.68	NS	12.17
	5.2 Identifying alphabetical sequences based on third letter	3.45	12.15	NS	18.73
	5.3 Identifying alphabetical sequences based on first, second, or third letter	2.04	13.50	5.33	8.90
	6.3 Using dictionary guide words	NS	9.59	6.99	5.72
	7.1 Finding definitions of single entry words	1.83	5.71	7.34	5.17
	7.2 Finding definitions of multiple entry words	3.22	10.09	13.02	9.96
	8.1 Selecting definitions of single entry words	NS	3.59	NS	7.86
	8.2 Selecting definitions of multiple entry words	NS	4.66	5.74	12.51
*	9.1 Interpreting single pronunciation symbols	NS	10.24	8.91	13.13
	9.2 Interpreting multiple pronunciation symbols	NS	NS	5.88	NS

Figure 20 (Continued)

Note: Explanations for abbreviations and omissions (*) are in the text.

Objective 3 Trends over R.I.L.		Objective 4 -- Retarded and Normal Groups											
		Level of Acquisition						Rate of Acquisition					
		Primary			Intermediate			Primary			Intermediate		
R	N	N=R	N>R	N<R	N=R	N>R	N<R	N=R	N>R	N<R	N=R	N>R	N<R
L	L	x			x			x			x		
L	L	x			x			x			x		
L	L	x			x			x			x		
L	L	x			x			x			x		
L	Q	x			x			x			x		
L	L	x			x			x			*	*	*
L	L	x				x			x		x		
L	L	x			x			x				x	
L	Q	x				x		x			x		
L	Q	x				x		x			x		
L	Q	x				x		x				x	
NS	L	*	*	*	x			*	*	*	x		
NS	L	*	*	*		x		*	*	*		x	
NS	L	x				x			x		x		
NS	Q			x	x				x		*	*	*

Figure 20 (Continued)

Note: Explanations for abbreviations and omissions (*) are in the text.

Category of basal reading skills	Objective 1 Skills arranged by expected sequence within categories	Objective 2 Intellectual processes % contribution AM	C	VM	R
Word functions skills $No\ q^2$	14.1 Recognizing functions of nouns	NS	7.58	11.79	12.12
	14.2 Recognizing functions of verbs	2.07	9.90	13.77	14.99
	14.3 Recognizing functions of adjectives	NS	10.16	8.89	11.21
	14.4 Recognizing functions of adverbs	3.07	7.96	8.41	12.37
	15.1 Specifying functions of nouns	NS	NS	10.38	16.91
	15.2 Specifying functions of verbs	NS	6.94	8.39	14.40
	15.3 Specifying functions of adjectives	NS	6.10	9.80	12.96
	15.4 Specifying functions of adverbs	NS	NS	5.01	7.87
Comprehension skills $q^2 = .9689$	16.1 Identifying cause-effect relationships directly stated in sentences	NS	8.75	8.18	7.09
	17.5 Identifying details in stories	2.62	11.36	13.76	16.84
	17.3 Identifying main ideas directly stated in paragraphs	NS	9.66	10.81	15.06
	17.1 Identifying main ideas directly stated in stories	2.17	10.98	11.43	13.05
Comprehension skills $q^2 = .9180$	16.2 Identifying cause-effect relationships implied in sentences	NS	10.81	15.06	7.77
	17.4 Identifying main ideas implied in paragraphs	NS	8.27	15.10	14.89
	17.2 Identifying main ideas implied in stories	1.91	7.71	10.63	14.43

Figure 20 (Continued)

Note: Explanations for abbreviations and omissions (*) are in the text.

Objective 3 Trends over R.I.L.		Objective 4 -- Retarded and Normal Groups											
		Level of Acquisition						Rate of Acquisition					
		Primary			Intermediate			Primary			Intermediate		
R	N	N=R	N>R	N<R	N=R	N>R	N<R	N=R	N>R	N<R	N=R	N>R	N<R
L	Q	x			x			x			x		
C	L	x			x			x				x	
L	Q	x			x			x				x	
L	Q	x			x			x				x	
L	L	x			x			x			x		
L	L	x			x			x			x		
NS	NS	x			x			x			*	*	*
C	C	x			x				x		*	*	*
L	L	x				x			x		x		
L	L	x				x			x		x		
L	L	x				x		x			x		
L	L	x				x		x			x		
L	L	x				x			x		x		
L	L	x			x				x			x	

Figure 20 (Continued)

Note: Explanations for abbreviations and omissions (*) are in the text.

Category of basal reading skills	Objective 1 Skills arranged by expected sequence within categories	Objective 2 Intellectual processes % contribution AM	C	VM	R
Comprehension skills No q^2	19.1 Interpreting similes	NS	NS	11.18	8.45
	19.2 Interpreting idioms	NS	9.08	16.64	11.63
	19.3 Interpreting hyperboles	NS	4.13	5.93	11.82
	19.4 Interpreting personification	NS	4.00	12.46	8.16
	19.5 Interpreting metaphors	NS	6.23	15.66	12.92
Comprehension skills No q^2	20.1 Predicting outcomes and actions	2.59	3.23	14.62	10.25
	20.2 Discriminating between fact and fiction	2.68	5.10	13.67	9.75
	20.3 Discriminating between fact and opinion	NS	4.99	11.75	12.50

Figure 20 (Continued)

Note: Explanations for abbreviations and omissions (*) are in the text.

Objective 3 Trends over R.I.L.		Objective 4 -- Retarded and Normal Groups											
		Level of Acquisition						Rate of Acquisition					
		Primary			Intermediate			Primary			Intermediate		
R	N	N=R	N>R	N<R	N=R	N>R	N<R	N=R	N>R	N<R	N=R	N>R	N<R
L	NS		x			x		*	*	*	*	*	*
L	C		x			x		*	*	*	*	*	*
NS	NS		x			x		*	*	*	*	*	*
L	C		x			x		*	*	*	*	*	*
L	L		x		x			*	*	*	*	*	*
C	L	x			x			*	*	*	*	*	*
C	L	x			x			*	*	*	*	*	*
L	NS		x			x		*	*	*	*	*	*

Figure 21

Relationships: Objectives One, Two, Three, and Five -- Comparisons Involving the Superior and Normal Groups

Note: Explanations for abbreviations and omissions (*) are in the text.

Category of basal reading skills	Objective 1 Skills arranged by expected sequence within categories	Objective 2 Intellectual processes % contribution AM	C	VM	R
Identifying words at sight	18.1 Identifying words at sight	*	*	*	*
Phonetic analysis skills $q^2 = .8653$	10.1 Associating vowel letters and sounds	NS	NS	NS	2.68
	10.2 Associating consonant letters and sounds	NS	1.55	NS	NS
	10.3 Associating consonant digraphs and sounds	NS	5.59	1.97	2.38
	10.8 Associating consonant blends and sounds	NS	4.23	NS	NS
	13.1 Identifying syllables in orally and visually presented short words	NS	10.10	NS	9.31
	12.1 Identifying syllables in visually presented short words	NS	6.70	5.33	9.70
	13.2 Identifying syllables in orally and visually presented long words	NS	11.93	3.43	13.99
	12.2 Identifying syllables in visually presented long words	NS	7.58	4.95	17.64
	11.3 Using spelling patterns	NS	13.76	5.39	14.74
Structural analysis skills	3.1 Identifying components of compounds	1.93	7.01	10.27	5.13
	4.1 Identifying roots, endings, and suffixes	4.52	7.52	15.17	14.76

Figure 21 (Continued)

Note: Explanations for abbreviations and omissions (*) are in the text.

Objective 3 Trends over R.I.L.		Objective 5 -- Superior and Normal Groups											
		Level of Acquisition						Rate of Acquisition					
		Primary			Intermediate			Primary			Intermediate		
S	N	N=S	N>S	N<S	N=S	N>S	N<S	N=S	N>S	N<S	N=S	N>S	N<S
L	Q			x			x	*	*	*	*	*	*
NS	L	x			x			*	*	*	*	*	*
NS	C			x	x			x			x		
C	C			x			x		x		x		
L	C			x	x			x			x		
L	L			x			x	x			*	*	*
L	L	x					x	x			x		
Q	Q			x			x	x			x		
L	L	x					x		x		x		
L	C			x			x	x			x		
L	Q			x			x		x		*	*	*
C	L	x					x	x			x		

Figure 21 (Continued)

Note: Explanations for abbreviations and omissions (*) are in the text.

Category of basal reading skills	Objective 1 Skills arranged by expected sequence within categories	Objective 2 Intellectual processes % contribution AM	C	VM	R
Structural analysis skills (Continued) $q^2 = .8943$	4.2 Identifying roots and prefixes	3.31	13.64	15.07	14.61
	4.4 Identifying roots and multiple affixes	2.88	10.13	8.03	7.65
	4.3 Locating roots by using root-change rules	2.26	20.75	8.79	16.43
	1.1 Changing roots by using root-change rules	2.53	17.44	6.88	10.12
*	2.1 Translating contractions	NS	17.10	NS	14.41
Dictionary skills $q^2 = .8722$	5.1 Identifying alphabetical sequences based on first letter	2.27	9.68	NS	12.17
	5.2 Identifying alphabetical sequences based on third letter	3.45	12.15	NS	18.73
	5.3 Identifying alphabetical sequences based on first, second, or third letter	2.04	13.50	5.33	8.90
	6.3 Using dictionary guide words	NS	9.59	6.99	5.72
	7.1 Finding definitions of single entry words	1.83	5.71	7.34	5.17
	7.2 Finding definitions of multiple entry words	3.22	10.09	13.02	9.96
	8.1 Selecting definitions of single entry words	NS	3.59	NS	7.86
	8.2 Selecting definitions of multiple entry words	NS	4.66	5.74	12.51
*	9.1 Interpreting single pronunciation symbols	NS	10.24	8.91	13.13
	9.2 Interpreting multiple pronunciation symbols	NS	NS	5.88	NS

Figure 21 (Continued)

Note: Explanations for abbreviations and omissions (*) are in the text.

Objective 3 Trends over R.I.L.		Objective 5 -- Superior and Normal Groups											
		Level of Acquisition						Rate of Acquisition					
		Primary			Intermediate			Primary			Intermediate		
S	N	N=S	N>S	N<S	N=S	N>S	N<S	N=S	N>S	N<S	N=S	N>S	N<S
L	Q			x			x	x			x		
L	Q	x			x				x		x		
L	C	x			x			x				x	
L	C	x					x	x			x		
Q	Q			x			x		x		x		
L	L			x			x	*	*	*	*	*	*
L	L			x			x	x				x	
L	Q	x					x		x		x		
Q	L	x					x	x			x		
Q	Q			x	x			x			x		
Q	L			x	x			x			x		
L	L	*	*	*			x	*	*	*	x		
L	L	*	*	*			x	*	*	*	x		
L	L			x			x	x			x		
Q	L	x			x			x					x

Figure 21 (Continued)

Note: Explanations for abbreviations and omissions (*) are in the text.

Category of basal reading skills	Objective 1 Skills arranged by expected sequence within categories	Objective 2 Intellectual processes % contribution AM	C	VM	R
Word functions skills $No\ q^2$	14.1 Recognizing functions of nouns	NS	7.58	11.79	12.12
	14.2 Recognizing functions of verbs	2.07	9.90	13.77	14.99
	14.3 Recognizing functions of adjectives	NS	10.16	8.89	11.21
	14.4 Recognizing functions of adverbs	3.07	7.96	8.41	12.37
	15.1 Specifying functions of nouns	NS	NS	10.38	16.91
	15.2 Specifying functions of verbs	NS	6.94	8.39	14.40
	15.3 Specifying functions of adjectives	NS	6.10	9.80	12.96
	15.4 Specifying functions of adverbs	NS	NS	5.01	7.87
Comprehension skills $q^2 = .9689$	16.1 Identifying cause-effect relationships directly stated in sentences	NS	8.75	8.18	7.09
	17.5 Identifying details in stories	2.62	11.36	13.76	16.84
	17.3 Identifying main ideas directly stated in paragraphs	NS	9.66	10.81	15.06
	17.1 Identifying main ideas directly stated in stories	2.17	10.98	11.43	13.05
Comprehension skills $q^2 = .9180$	16.2 Identifying cause-effect relationships implied in sentences	NS	10.81	15.06	7.77
	17.4 Identifying main ideas implied in paragraphs	NS	8.27	15.10	14.89
	17.2 Identifying main ideas implied in stories	1.91	7.71	10.63	14.43

Figure 21 (Continued)

Note: Explanations for abbreviations and omissions (*) are in the text.

Objective 3 Trends over R.I.L.		Objective 5 -- Superior and Normal Groups											
		Level of Acquisition						Rate of Acquisition					
		Primary			Intermediate			Primary			Intermediate		
S	N	N=S	N>S	N<S	N=S	N>S	N<S	N=S	N>S	N<S	N=S	N>S	N<S
Q	L			x			x	x			x		
L	L			x			x	x			x		
Q	Q			x			x	x			x		
Q	L			x			x	x			x		
L	L	x					x	x			x		
L	L	x					x			x	x		
L	L	x					x			x	x		
NS	L		x				x	x					x
C	Q	x					x	x			*	*	*
L	L			x			x	x			x		
L	L			x			x	x			x		
L	Q			x			x	x			x		
L	C			x			x	x			x		
L	L			x			x	x			x		
L	L			x			x	x			x		

Figure 21 (Continued)

Note: Explanations for abbreviations and omissions (*) are in the text.

Category of basal reading skills	Objective 1 Skills arranged by expected sequence within categories	Objective 2 Intellectual processes % contribution AM	C	VM	R
Comprehension skills No q^2	19.1 Interpreting similes	NS	NS	11.18	8.45
	19.2 Interpreting idioms	NS	9.08	16.64	11.63
	19.3 Interpreting hyperboles	NS	4.13	5.93	11.82
	19.4 Interpreting personification	NS	4.00	12.46	8.16
	19.5 Interpreting metaphors	NS	6.23	15.66	12.92
Comprehension skills No q^2	20.1 Predicting outcomes and actions	2.59	3.23	14.62	10.25
	20.2 Discriminating between fact and fiction	2.68	5.10	13.67	9.75
	20.3 Discriminating between fact and opinion	NS	4.99	11.75	12.50

Figure 21 (Continued)

Note: Explanations for abbreviations and omissions (*) are in the text.

Objective 3 Trends over R.I.L.		Objective 5 -- Superior and Normal Groups											
		Level of Acquisition						Rate of Acquisition					
		Primary			Intermediate			Primary			Intermediate		
S	N	N=S	N>S	N<S	N=S	N>S	N<S	N=S	N>S	N<S	N=S	N>S	N<S
NS	L	x			x			*	*	*	*	*	*
C	Q			x			x	*	*	*	*	*	*
NS	C	x					x	*	*	*	*	*	*
C	Q	x					x	*	*	*	*	*	*
L	C			x			x	*	*	*	*	*	*
L	C			x			x	*	*	*	*	*	*
L	L			x			x	*	*	*	*	*	*
NS	C			x			x	*	*	*	*	*	*

CHAPTER 9

SUMMARY

Problem

Purpose and Objectives

The purpose of this investigation was to study achievement in basal reading skills by mentally handicapped, intellectually normal, and intellectually superior pupils taught in a basal reading program at reading instructional levels 2, 3, 4, and 5. Following from this purpose were research objectives pertaining to sequences among basal reading skills, intellectual processes related to basal reading skills, trends in achievement of basal reading skills over reading instructional levels, intellectually retarded and normal groups' achievement in basal reading skills, and intellectually normal and superior groups' achievement in basal reading skills. The detailed research objectives are specified subsequently in the sections containing summaries of results relevant to the respective objectives.

Related Research

Investigators who have reported information related to the present project are listed subsequently by research objective. Sequences among basal reading skills were considered by Aaron (1961, 1964), Bond and Wagner (1966), Gray (1960), McKee (1966), and Russell (1961). Intellectual processes related to acquisition of basal reading skills were studied by Bond and Clymer (1955), Holmes and Singer (1966), Raymond (1955), and Stake (1958). Progress in reading over a period of time was studied by Bradway (1939), Engle (1942), Janes (1953), McElwee (1931), Murdoch (1918), Nemzek and Meixner (1939), and Walsh (1938). Intellectually retarded and normal groups' achievement in the

basal reading skills was investigated by Davidson (1931), Dunn (1954), Jones (1919-1920), Klausmeier, Feldhusen, and Check (1959), Merrill (1924), and Shotick (1960). Intellectually normal and superior groups' achievement in the basal reading skills was examined by Bleismer (1952), Davidson (1931), and Merrill (1924). The intent in the present project was to extend earlier studies of achievement of reading skills.

Procedures

Subjects. -- Subjects were 947 pupils in 44 classes who were taught at reading instructional levels 2, 3, 4, and 5, respectively, and who satisfied certain other selection criteria. The total number of pupils was divided into two groups: 639 subjects were in the processes-sequences group; 308 subjects were in the combined retarded, normal, and superior groups (108 retarded subjects, 108 normal subjects, and 92 superior subjects).

Basal Reading Skills. -- A sample of 50 basal reading skills was selected for study. These skills were selected from six categories: identifying words at sight, phonetic analysis skills, structural analysis skills, dictionary skills, word functions skills, and comprehension skills.

Intellectual Processes. -- Four intellectual processes were selected from the domain of possibly relevant attributes. The four intellectual processes chosen for study were associative memory, conceptualization, verbal meaning, and reasoning.

Basal Reading Program. -- The Scott, Foresman New Basic Readers program was used in teaching reading to pupils in the 44 participating classes. The teachers were furnished the materials to teach the basal reading program. The amount of time which the teachers spent in reading instruction was controlled: approximately 1 1/2 hours daily for pupils at the primary level and approximately 1 1/4 hours daily for pupils at the intermediate level.

Orientation Program for Teachers. -- The investigators conducted an orientation program for participating teachers. This program was devoted to in-service work on teaching reading and to briefing about project procedures and related activities.

Tests for Assessing the Basal Reading Skills and the Intellectual Processes. -- Twenty tests were developed for assessing the 50 basal reading skills selected for study; most of these tests consisted of several subtests specific to particular skills. Four previously-used tests of intellectual processes were selected and modified for the purposes of the present study.

Data Collection Procedures. -- The directions for all tests were recorded on audio tape. In addition, test items (content per se) for tests involving auditory stimuli were taped (e.g., test #10, Phonics Sounds). The teachers used these tapes, and written copies of test directions and procedures, in administering the tests to pupils in their classes. There was one exception: project personnel administered test #18, Sight Vocabulary to subjects individually.

The data collection schedule was the following. In the fall (October), pupils were administered tests #1-#17 which assessed 41 basal reading skills; seven months later in the spring (May), pupils were administered tests #1-#17 again. During September and October, pupils were administered test #18 (Sight Vocabulary). In March, pupils were administered test #19 (Figurative Language), test #20 (Critical Reading), and the tests sampling the four intellectual processes.

Data Analyses. -- The procedures used to analyze data pertinent to each research question are outlined below. The information for each research question includes the subjects, the data, and the techniques for the analyses.

1. Sequences Among Basal Reading Skills.

   a. Subjects: processes-sequences group.

   b. Data: task analyses and test content descriptions indicating the nature of the basal reading skills as tested; scores on spring administration of tests #1-#17 and scores on test #19.

c. Analyses: rational analyses to establish expected sequences and Kaiser's (1962) procedures for scaling a simplex.

2. Intellectual Processes Related to Acquisition of Basal Reading Skills.

a. Subjects: processes-sequences group.

b. Data: scores on the intellectual processes tests, scores on the spring administration of reading tests #1-#17 and scores on tests #19 and #20.

c. Analyses: multiple and partial regression procedures--independent variables were scores on the intellectual processes tests, dependent variables were scores on the reading tests.

3. Trends Over Reading Instructional Levels.

a. Subjects: retarded, normal, and superior groups.

b. Data: scores on fall administration of tests #1-#17 and scores on tests #18, #19, and #20.

c. Analyses: within each intelligence level, single factor analyses of variance and examination for linear, quadratic, and cubic trends.

4. Retarded, Normal, and Superior Pupils' Levels of Acquisition on the Basal Reading Skills at the Beginning of the 7-month Instructional Period.

a. Subjects: the retarded and normal groups; the normal and superior groups.

b. Data: scores on fall administration of tests #1-#17 and scores on tests #18, #19, and #20.

c. Analyses: *t* tests.

5. Retarded, Normal, and Superior Pupils' Rates of Acquisition of Basal Reading Skills During the 7-month Instructional Period.

a. Subjects: the retarded and normal groups; the normal and superior groups.

b. Data: scores on the fall and spring administrations of tests #1-#17.

c. Analyses: two-factor analyses of variance -- first factor was intelligence level, second factor was repeated measures (fall, spring) of basal reading skills.

Sequences Among Basal Reading Skills

The research objective was to identify sequences among basal reading skills in five categories: phonetic analysis, structural analysis, dictionary, word functions, and comprehension. The research questions pertained to expected sequences among basal reading skills and to the goodness of fit of the simplex model.

Expected Sequences Among Basal Reading Skills

The research question was this: Among skills in a given category of basal reading skills, what sequence can be expected, a priori, on the basis of the criterion, level of complexity? Listed below by category of basal reading skills are the expected hierarchical sequences which were determined, a priori, on the basis of the criterion, level of complexity, defined as degree of inclusiveness.

Phonetic Analysis Skills. -- The expected sequence among the phonetic analysis skills was 10.1 associating vowel letters and sounds, 10.2 associating consonant letters and sounds, 10.3 associating consonant digraphs and sounds, 10.8 associating consonant blends and sounds, 13.1 identifying syllables in orally and visually presented short words, 12.1 identifying syllables in visually presented short words, 13.2 identifying syllables in orally and visually presented long words, 12.2 identifying syllables in visually presented long words, and 11.3 using spelling patterns.

Structural Analysis Skills. -- 2.1 Translating contractions was not considered in the set of structural analysis skills for the purpose of identifying a sequence. The expected sequence among the remaining structural analysis skills was 3.1 identifying components of compounds, 4.1 identifying roots, endings, and suffixes, 4.2 identifying roots and prefixes, 4.4 identifying roots and multiple affixes, 4.3 locating roots by using root-change rules, and 1.1 changing roots by using root-change rules.

Dictionary Skills. -- 9.1 Interpreting single pronunciation symbols and 9.2 interpreting multiple pronunciation symbols were not considered in the set of dictionary skills for the purpose of identifying a sequence. The expected sequence among the remaining dictionary skills was 5.1 identifying alphabetical sequences based on first letter, 5.2 identifying alphabetical sequences based on third letter, 5.3 identifying alphabetical sequences based on first, second, or third letter, 6.3 using dictionary guide words, 7.1 finding definitions of single entry words, 7.2 finding definitions of multiple entry words, 8.1 selecting definitions of single entry words, and 8.2 selecting definitions of multiple entry words.

Word Functions Skills. -- Two subsets of skills were involved here: recognizing functions of words and phrases in sentences (14.1 - 14.4) and specifying the form classes needed to function in a given sentence context (15.1 - 15.4). There was no reason for expecting the four elements within each subset to vary in complexity. Therefore, the ordering of the variables was restricted to the subsets as a whole. Specifying functions was considered to be more complex than recognizing functions.

Comprehension Skills. -- Three subsets of skills were involved here: identifying directly stated ideas and details, identifying implicitly stated ideas, and interpreting figurative language. There was no reason to expect the skills in the figurative language category to differ in complexity; consequently, skills in this subset were considered no further in identifying sequences based on the complexity criterion. The expected sequences within the remaining two subsets were the following.

1. Identifying directly stated ideas and details: 16.1 identifying cause-effect relationships directly stated in sentences, 17.5 identifying details in stories, 17.3 identifying main ideas directly stated in paragraphs, and 17.1 identifying main ideas directly stated in stories.

2. Identifying implicitly stated ideas: 16.2 identifying cause-effect relationships implied in sentences, 17.4 identifying main ideas implied in paragraphs, and 17.2 identifying main ideas implied in stories.

Goodness of Fit of the Simplex Model

The research question was the following: Does the simplex model fit sets of data describing skills in an expected sequence which were ordered, a priori, on the basis of the criterion, level of complexity?

The simplex model fit, fairly well, sets of data describing the basal reading skills organized in the hierarchical sequences presented above.

Intellectual Processes Related to Basal Reading Skills

The research objective was to examine intellectual processes related to achievement in selected basal reading skills. The specific research questions were the following.

a. Identification of Processes. -- Which, of a selected set of intellectual processes, are related singly, and in combination, to achievement in each basal reading skill?

b. Extent of Relationship. -- To what extent are the identified intellectual processes and combinations of intellectual processes related to achievement in each basal reading skill?

c. Relative Contribution. -- What is the relative contribution, or weighting, of each intellectual process when combinations of intellectual processes are related to achievement in a given basal reading skill?

d. Differences Among Skills. -- Do intellectual processes related to achievement differ among basal reading skills?

Evidence about the first three research questions is presented in Appendix Q. Evidence about the fourth research question pertaining to differences among skills is summarized below.

Phonetic Analysis Skills

The most frequent contributor to the phonetic analysis skills was conceptualization. This process contributed to eight of the nine skills: associating consonant letters and sounds, associating consonant digraphs and sounds, associating consonant blends and sounds, using spelling patterns, identifying syllables in orally and visually presented short words, identifying syllables in visually presented short words, identifying syllables in orally and visually presented long words, and identifying syllables in visually presented long words. The next most

prominent process was reasoning, by its contribution to seven of nine skills: associating vowel letters and sounds, associating consonant digraphs and sounds, using spelling patterns, identifying syllables in orally and visually presented short words, identifying syllables in visually presented short words, identifying syllables in orally and visually presented long words, and identifying syllables in visually presented long words. Verbal meaning contributed to four skills: using spelling patterns, identifying syllables in visually presented short words, identifying syllables in orally and visually presented long words, and identifying syllables in visually presented long words, while associative memory contributed to only one skill, associating consonant digraphs and sounds.

Structural Analysis Skills

Two processes, conceptualization and reasoning, contributed to all seven of the structural analysis skills: identifying components of compounds, identifying roots, endings, and suffixes, identifying roots and prefixes, identifying roots and multiple affixes, translating contractions, locating roots by using root-change rules, and changing roots by using root-change rules. Associative memory and verbal meaning both contributed to six of the seven skills: identifying components of compounds, identifying roots, endings, and suffixes, identifying roots and prefixes, identifying roots and multiple affixes, locating roots by using root-change rules, and changing roots by using root-change rules.

Dictionary Skills

The most prominent contributors to the dictionary skills were the processes, conceptualization and reasoning, which contributed to all except one of the ten skills: identifying alphabetical sequences based on first letter, identifying alphabetical sequences based on third letter, identifying alphabetical sequences based on first, second, or third letter, using dictionary guide words, finding definitions of single

entry words, finding definitions of multiple entry words, selecting definitions of single entry words, selecting definitions of multiple entry words, and interpreting single pronunciation symbols. Verbal meaning was a contributor to seven skills: identifying alphabetical sequences based on first, second, or third letter, using dictionary guide words, finding definitions of single entry words, finding definitions of multiple entry words, selecting definitions of multiple entry words, interpreting single pronunciation symbols, and interpreting multiple pronunciation symbols. Associative memory contributed to five skills: identifying alphabetical sequences based on first letter, identifying alphabetical sequences based on third letter, identifying alphabetical sequences based on first, second, or third letter, finding definitions of single entry words, and finding definitions of multiple entry words.

Word Functions Skills

For the word functions skills, verbal meaning and reasoning both contributed to all eight skills: recognizing functions of nouns, recognizing functions of verbs, recognizing functions of adjectives, recognizing functions of adverbs, specifying functions of nouns, specifying functions of verbs, specifying functions of adjectives, and specifying functions of adverbs. The next most frequent contributor was conceptualization which contributed to six skills: recognizing functions of nouns, recognizing functions of verbs, recognizing functions of adjectives, recognizing functions of adverbs, specifying functions of verbs, and specifying functions of adverbs. Associative memory contributed to only two skills, these being recognizing functions of verbs and recognizing functions of adverbs.

Comprehension Skills

Highest in frequency of contribution to the comprehension skills were two processes, verbal meaning and reasoning, which contributed to

all fifteen of the comprehension skills: identifying cause-effect relationships directly stated in sentences, identifying main ideas directly stated in paragraphs, identifying main ideas directly stated in stories, identifying cause-effect relationships implied in sentences, identifying main ideas implied in paragraphs, identifying main ideas implied in stories, identifying details in stories, interpreting similes, interpreting idioms, interpreting hyperboles, interpreting personification, interpreting metaphors, predicting outcomes and actions, discriminating between fact and fiction, and discriminating between fact and opinion. These two processes were followed closely by conceptualization, which contributed to fourteen of the fifteen skills: identifying cause-effect relationships directly stated in sentences, identifying main ideas directly stated in paragraphs, identifying main ideas directly stated in stories, identifying cause-effect relationships implied in sentences, identifying main ideas implied in paragraphs, identifying main ideas implied in stories, identifying details in stories, interpreting idioms, interpreting hyperboles, interpreting personification, interpreting metaphors, predicting outcomes and actions, discriminating between fact and fiction, and discriminating between fact and opinion. Associative memory was a contributor to only three comprehension skills: identifying main ideas directly stated in stories, predicting outcomes and actions, and discriminating between fact and fiction.

Trends in Achievement Over Reading Instructional Levels

The research objective was to describe trends in achievement of basal reading skills over reading instructional levels 2, 3, 4, and 5. The specific research questions pertained to retarded, normal, and superior groups considered separately. These questions were the following.

a. Presence of a Trend. -- For a given basal reading skill, is there a trend in the means at reading instructional levels 2, 3, 4, and 5?

b. Nature of the Trend. -- For a given basal reading skill, what is the nature of the trend of the means at reading instructional levels 2, 3, 4, and 5?

Retarded Group

Presence of Trends

For the retarded group, significant trends were present in the means of 37 of the 50 skills. There were no trends in the means for 13 skills: Phonetic Analysis Skills -- 10.1 associating vowel letters and sounds, 10.2 associating consonant letters and sounds, 10.3 associating consonant digraphs and sounds, 10.8 associating consonant blends and sounds, 13.1 identifying syllables in orally and visually presented short words, 13.2 identifying syllables in orally and visually presented long words, 12.2 identifying syllables in visually presented long words; Dictionary Skills -- 8.1 selecting definitions of single entry words, 8.2 selecting definitions of multiple entry words, 9.1 interpreting single pronunciation symbols, 9.2 interpreting multiple pronunciation symbols; Word Functions Skills -- 15.4 specifying functions of adverbs; Comprehension Skills -- 19.3 interpreting hyperboles.

Nature of Trends

Linear Trends. -- For the retarded group, linear trends were present in the means for 33 skills: 18.1 identifying words at sight; Phonetic Analysis Skills -- 11.3 using spelling patterns, 12.1 identifying syllables in visually presented short words; Structural Analysis Skills -- 3.1 identifying components of compounds, 4.1 identifying roots, endings, and suffixes, 4.2 identifying roots and prefixes, 4.4 identifying roots and multiple affixes, 2.1 translating contractions, 4.3 locating roots by using root-change rules, 1.1 changing roots by using root-change rules; Dictionary Skills -- 5.1 identifying alphabetical sequences based on first letter, 5.2 identifying alphabetical sequences based on third letter, 5.3 identifying alphabetical sequences based on

first, second, or third letter, 6.3 using dictionary guide words, 7.1 finding definitions of single entry words, 7.2 finding definitions of multiple entry words; Word Functions Skills -- 14.1 recognizing functions of nouns, 14.3 recognizing functions of adjectives, 14.4 recognizing functions of adverbs, 15.1 specifying functions of nouns, 15.2 specifying functions of verbs, 15.3 specifying functions of adjectives; Comprehension Skills -- 17.3 identifying main ideas directly stated in paragraphs, 17.1 identifying main ideas directly stated in stories, 16.2 identifying cause-effect relationships implied in sentences, 17.4 identifying main ideas implied in paragraphs, 17.2 identifying main ideas implied in stories, 17.5 identifying details in stories, 19.1 interpreting similes, 19.2 interpreting idioms, 19.4 interpreting personification, 19.5 interpreting metaphors, and 20.3 discriminating between fact and opinion.

Quadratic Trends. -- For the retarded group, quadratic trends were not present in the means on any of the basal reading skills.

Cubic Trends. -- For the retarded group, a cubic trend was present in the means for four skills: Word Functions Skills -- 14.2 recognizing functions of verbs; Comprehension Skills -- 16.1 identifying cause-effect relationships directly stated in sentences, 20.1 predicting outcomes and actions, and 20.2 discriminating between fact and fiction.

Normal Group

Presence of Trends

For the normal group, significant trends were present in the means on 44 of the 50 skills. There were no trends in the means for six skills: Phonetic Analysis Skills -- 10.1 associating vowel letters and sounds, 10.2 associating consonant letters and sounds; Word Functions Skills -- 15.4 specifying functions of adverbs; Comprehension Skills -- 19.1 interpreting similes, 19.3 interpreting hyperboles, and 20.3 discriminating between fact and opinion.

Nature of Trends

Linear Trends. -- For the normal group, linear trends were present in the means for 30 skills: 18.1 identifying words at sight; Phonetic Analysis Skills -- 10.8 associating consonant blends and sounds, 11.3 using spelling patterns, 13.1 identifying syllables in orally and visually presented short words, 12.1 identifying syllables in visually presented short words, 12.2 identifying syllables in visually presented long words; Structural Analysis Skills -- 3.1 identifying components of compounds, 4.2 identifying roots and prefixes, 4.4 identifying roots and multiple affixes, 4.3 locating roots by using root-change rules, 1.1 changing roots by using root-change rules; Dictionary Skills -- 5.1 identifying alphabetical sequences based on first letter, 5.2 identifying alphabetical sequences based on third letter, 5.3 identifying alphabetical sequences based on first, second, or third letter, 8.1 selecting definitions of single entry words, 8.2 selecting definitions of multiple entry words, 9.1 interpreting single pronunciation symbols; Word Functions Skills -- 14.2 recognizing functions of verbs, 15.1 specifying functions of nouns, 15.2 specifying functions of verbs, 15.3 specifying functions of adjectives; Comprehension Skills -- 17.3 identifying main ideas directly stated in paragraphs, 17.1 identifying main ideas directly stated in stories, 16.2 identifying cause-effect relationships implied in sentences, 17.4 identifying main ideas implied in paragraphs, 17.2 identifying main ideas implied in stories, 17.5 identifying details in stories, 19.5 interpreting metaphors, 20.1 predicting outcomes and actions, and 20.2 discriminating between fact and fiction.

Quadratic Trends. -- For the normal group, quadratic trends were present in the means for nine skills: Structural Analysis Skills -- 13.2 identifying syllables in orally and visually presented long words, 2.1 translating contractions; Dictionary Skills -- 6.3 using dictionary guide words, 7.1 finding definitions of single entry words, 7.2 finding definitions of multiple entry words, 9.2 interpreting multiple pronunciation symbols; Word Functions Skills -- 14.1 recognizing functions

of nouns, 14.3 recognizing functions of adjectives, and 14.4 recognizing functions of adverbs.

Cubic Trends. -- For the normal group, cubic trends were present in the means for five skills: Phonetic Analysis Skills -- 10.3 associating consonant digraphs and sounds; Structural Analysis Skills -- 4.1 identifying roots, endings, and suffixes; Comprehension Skills -- 16.1 identifying cause-effect relationships directly stated in sentences, 19.2 interpreting idioms, and 19.4 interpreting personification.

Superior Group

Presence of Trends

For the superior group, significant trends were present in the means for all of the 50 skills.

Nature of Trends

Linear Trends. -- For the superior group, linear trends were present in the means for 26 skills: Phonetic Analysis Skills -- 10.1 associating vowel letters and sounds, 13.1 identifying syllables in orally and visually presented short words, 12.1 identifying syllables in visually presented short words, and 12.2 identifying syllables in visually presented long words; Structural Analysis Skills -- 4.1 identifying roots, endings, and suffixes; Dictionary Skills -- 5.1 identifying alphabetical sequences based on first letter, 5.2 identifying alphabetical sequences based on third letter, 6.3 using dictionary guide words, 7.2 finding definitions of multiple entry words, 8.1 selecting definitions of single entry words, 8.2 selecting definitions of multiple entry words, 9.1 interpreting single pronunciation symbols, and 9.2 interpreting multiple pronunciation symbols; Word Functions Skills -- 14.1 recognizing functions of nouns, 14.2 recognizing functions of verbs, 14.4 recognizing functions of adverbs, 15.1 specifying functions of nouns, 15.2 specifying functions of verbs, 15.3 specifying functions of adjectives, and 15.4 specifying functions

of adverbs; Comprehension Skills -- 17.3 identifying main ideas directly stated in paragraphs, 17.4 identifying main ideas implied in paragraphs, 17.2 identifying main ideas implied in stories, 17.5 identifying details in stories, 19.1 interpreting similes, and 20.2 discriminating between fact and fiction.

Quadratic Trends. -- For the superior group, quadratic trends were present in the means for 13 skills: 18.1 identifying words at sight, Phonetic Analysis Skills -- 13.2 identifying syllables in orally and visually presented long words; Structural Analysis Skills -- 3.1 identifying components of compounds, 4.2 identifying roots and prefixes, 4.4 identifying roots and multiple affixes, and 2.1 translating contractions; Dictionary Skills -- 5.3 identifying alphabetical sequences based on first, second, or third letter, and 7.1 finding definitions of single entry words; Word Functions Skills -- 14.3 recognizing functions of adjectives; Comprehension Skills -- 16.1 identifying cause-effect relationships directly stated in sentences, 17.1 identifying main ideas directly stated in stories, 19.2 interpreting idioms, and 19.4 interpreting personification.

Cubic Trends. -- For the superior group, cubic trends were present in the means for 11 skills: Phonetic Analysis Skills -- 10.2 associating consonant letters and sounds, 10.3 associating consonant digraphs and sounds, 10.8 associating consonant blends and sounds, and 11.3 using spelling patterns; Structural Analysis Skills -- 4.3 locating roots by using root-change rules, and 1.1 changing roots by using root-change rules; Comprehension Skills -- 16.2 identifying cause-effect relationships implied in sentences, 19.3 interpreting hyperboles, 19.5 interpreting metaphors, 20.1 predicting outcomes and actions, and 20.3 discriminating between fact and opinion.

Intellectually Retarded and Normal Groups' Achievement in the Basal Reading Skills

The research objective was to compare retarded and normal groups' achievement in the basal reading skills. The specific research questions pertained to levels of acquisition and rates of acquisition of retarded

and normal groups who are equated on MA and general reading achievement levels and who are taught at the same reading instructional levels.

Level of Acquisition

The research question was this: At the primary and intermediate reading instructional levels, do retarded and normal groups differ in level of acquisition in the basal reading skills ~~during~~ at the beginning of a 7-month instructional period?

Primary Level

No Differences. -- At the primary level, the normal and retarded groups did not differ in level of acquisition in 38 skills: 18.1 identifying words at sight; Phonetic Analysis Skills -- 10.1 associating vowel letters and sounds, 10.2 associating consonant letters and sounds, 10.3 associating consonant digraphs and sounds, 10.8 associating consonant blends and sounds, 13.1 identifying syllables in orally and visually presented short words, and 12.1 identifying syllables in visually presented short words; Structural Analysis Skills -- 3.1 identifying components of compounds, 4.1 identifying roots, endings, and suffixes, 4.2 identifying roots and prefixes, 4.4 identifying roots and multiple affixes, 4.3 locating roots by using root-change rules, 1.1 changing roots by using root-change rules, and 2.1 translating contractions; Dictionary Skills -- 5.1 identifying alphabetical sequences based on first letter, 5.2 identifying alphabetical sequences based on third letter, 5.3 identifying alphabetical sequences based on first, second, or third letter, 6.3 using dictionary guide words, 7.1 finding definitions of single entry words, 7.2 finding definitions of multiple entry words, and 9.1 interpreting single pronunciation symbols; Word Functions Skills -- 14.1 recognizing functions of nouns, 14.2 recognizing functions of verbs, 14.3 recognizing functions of adjectives, 14.4 recognizing functions of adverbs, 15.1 specifying functions of nouns, 15.2 specifying functions of verbs, 15.3 specifying functions of

adjectives, and 15.4 specifying functions of adverbs; Comprehension Skills -- 16.1 identifying cause-effect relationships directly stated in sentences, 17.3 identifying main ideas directly stated in paragraphs, 17.1 identifying main ideas directly stated in stories, 16.2 identifying cause-effect relationships implied in sentences, 17.4 identifying main ideas implied in paragraphs, 17.2 identifying main ideas implied in stories, 17.5 identifying details in stories, 20.1 predicting outcomes and actions, and 20.2 discriminating between fact and fiction.

Normal Exceeded Retarded. -- The normal group at the primary level exceeded the retarded group in level of acquisition on nine skills: Phonetic Analysis Skills -- 13.2 identifying syllables in orally and visually presented long words, 12.2 identifying syllables in visually presented long words, and 11.3 using spelling patterns; Comprehension Skills -- 19.1 interpreting similes, 19.2 interpreting idioms, 19.3 interpreting hyperboles, 19.4 interpreting personification, 19.5 interpreting metaphors, and 20.3 discriminating between fact and opinion.

Retarded Exceeded Normal. -- The retarded group at the primary level exceeded the normal group in level of acquisition on one Dictionary Skill -- 9.2 interpreting multiple pronunciation symbols.

Intermediate Level

No Differences. -- At the intermediate level, the normal and retarded groups did not differ in level of acquisition on 22 skills: 18.1 identifying words at sight; Phonetic Analysis Skills -- 10.1 associating vowel letters and sounds, 10.2 associating consonant letters and sounds, and 10.3 associating consonant digraphs and sounds; Structural Analysis Skills -- 3.1 identifying components of compounds, and 4.1 identifying roots, endings, and suffixes; Dictionary Skills -- 5.3 identifying alphabetical sequences based on first, second, or third letter, 8.1 selecting definitions of single entry words, and 9.2 interpreting multiple pronunciation symbols; Word Functions Skills -- 14.1 recognizing functions of nouns, 14.2 recognizing functions of verbs,

14.3 recognizing functions of adjectives, 14.4 recognizing functions of adverbs, 15.1 specifying functions of nouns, 15.2 specifying functions of verbs, 15.3 specifying functions of adjectives, and 15.4 specifying functions of adverbs; Comprehension Skills -- 16.1 identifying cause-effect relationships directly stated in sentences, 17.2 identifying main ideas implied in stories, 19.5 interpreting metaphors, 20.1 predicting outcomes and actions, and 20.2 discriminating between fact and fiction.

Normal Exceeded Retarded. -- The normal subjects at the intermediate level exceeded the retarded subjects in level of acquisition on 28 skills: Phonetic Analysis Skills -- 10.8 associating consonant blends and sounds, 13.1 identifying syllables in orally and visually presented short words, 12.1 identifying syllables in visually presented short words, 13.2 identifying syllables in orally and visually presented long words, 12.2 identifying syllables in visually presented long words, and 11.3 using spelling patterns; Structural Analysis Skills -- 4.2 identifying roots and prefixes, 4.4 identifying roots and multiple affixes, 4.3 locating roots by using root-change rules, 1.1 changing roots by using root-change rules, and 2.1 translating contractions; Dictionary Skills -- 5.1 identifying alphabetical sequences based on first letter, 5.2 identifying alphabetical sequences based on third letter, 6.3 using dictionary guide words, 7.1 finding definitions of single entry words, 7.2 finding definitions of multiple entry words, 8.2 selecting definitions of multiple entry words, and 9.1 interpreting single pronunciation symbols; Comprehension Skills -- 17.3 identifying main ideas directly stated in paragraphs, 17.1 identifying main ideas directly stated in stories, 16.2 identifying cause-effect relationships implied in sentences, 17.4 identifying main ideas implied in paragraphs, 17.5 identifying details in stories, 19.1 interpreting similes, 19.2 interpreting idioms, 19.3 interpreting hyperboles, 19.4 interpreting personification, and 20.3 discriminating between fact and opinion.

Retarded Exceeded Normal. -- At the intermediate level, the retarded subjects did not exceed the normal subjects in level of acquisition in any skill.

Rate of Acquisition

The research question was the following: At the primary and intermediate reading instructional levels, do retarded and normal groups differ in rate of acquisition in the basal reading skills during a 7-month instructional period?

Primary Level

At the primary level, the groups did not reach the task ceiling for any skill. The subjects showed significant increments, during the 7-month instructional period, in all skills.

No Differences. -- At the primary level, the normal and retarded groups did not differ in rate of acquisition in 21 skills: Phonetic Analysis Skills -- 10.1 associating vowel letters and sounds, 10.2 associating consonant letters and sounds, 10.3 associating consonant digraphs and sounds, 10.8 associating consonant blends and sounds, 13.1 identifying syllables in orally and visually presented short words, 12.1 identifying syllables in visually presented short words, 13.2 identifying syllables in orally and visually presented long words, and 12.2 identifying syllables in visually presented long words; Structural Analysis Skills -- 4.1 identifying roots, endings, and suffixes; Dictionary Skills -- 5.1 identifying alphabetical sequences based on first letter, 5.3 identifying alphabetical sequences based on first, second, or third letter, 6.3 using dictionary guide words, 7.1 finding definitions of single entry words, and 7.2 finding definitions of multiple entry words; Word Functions Skills -- 14.4 recognizing functions of adverbs, 15.1 specifying functions of nouns, 15.2 specifying functions of verbs, 15.3 specifying functions of adjectives, and 15.4 specifying functions of adverbs; Comprehension Skills -- 17.1 identifying main ideas directly stated in stories, and 16.2 identifying cause-effect relationships implied in sentences.

Normal Exceeded Retarded. -- At the primary level, the normal group exceeded the retarded group in rate of acquisition in 18 skills: Phonetic Analysis Skills -- 11.3 using spelling patterns; Structural Analysis Skills -- 3.1 identifying components of compounds, 4.2 identifying roots and prefixes, 4.4 identifying roots and multiple affixes, 2.1 translating contractions, 4.3 locating roots by using root-change rules, and 1.1 changing roots by using root-change rules; Dictionary Skills -- 5.2 identifying alphabetical sequences based on third letter, 9.1 interpreting single pronunciation symbols, and 9.2 interpreting multiple pronunciation symbols; Word Functions Skills -- 14.1 recognizing functions of nouns, 14.2 recognizing functions of verbs, and 14.3 recognizing functions of adjectives; Comprehension Skills -- 16.1 identifying cause-effect relationships directly stated in sentences, 17.3 identifying main ideas directly stated in paragraphs, 17.4 identifying main ideas implied in paragraphs, 17.2 identifying main ideas implied in stories, and 17.5 identifying details in stories.

Retarded Exceeded Normal. -- At the primary level, the retarded group did not exceed the normal group in rate of acquisition in any skills.

Intermediate Level

With one exception, the groups did not reach the task ceilings. The exception was 5.1 identifying alphabetical sequences based on first letter where the normal group approached the task ceiling. The subjects showed significant increments in all skills except four: 9.2 interpreting multiple pronunciation symbols, 15.2 specifying functions of verbs, 15.4 specifying functions of adverbs, and 16.1 identifying cause-effect relationships directly stated in sentences. The groups' rates of acquisition could not be compared on these five skills where a group approached a task ceiling or the subjects did not show significant increments.

No Differences. -- At the intermediate level, the normal and retarded groups did not differ in rate of acquisition in 27 skills: Phonetic Analysis Skills -- 10.1 associating vowel letters and sounds, 10.2 associating consonant letters and sounds, 10.3 associating consonant digraphs and sounds, 10.8 associating consonant blends and sounds, 13.1 identifying syllables in orally and visually presented short words, 12.1 identifying syllables in visually presented short words, 13.2 identifying syllables in orally and visually presented long words, 12.2 identifying syllables in visually presented long words, and 11.3 using spelling patterns; Structural Analysis Skills -- 4.2 identifying roots and prefixes, 4.4 identifying roots and multiple affixes, 4.3 locating roots by using root-change rules, 1.1 changing roots by using root-change rules, and 2.1 translating contractions; Dictionary Skills -- 5.2 identifying alphabetical sequences based on third letter, 6.3 using dictionary guide words, 7.1 finding definitions of single entry words, 8.1 selecting definitions of single entry words, and 9.1 interpreting single pronunciation symbols; Word Functions Skills -- 14.1 recognizing functions of nouns, 15.1 specifying functions of nouns, and 15.3 specifying functions of adjectives; Comprehension Skills -- 17.3 identifying main ideas directly stated in paragraphs, 17.1 identifying main ideas directly stated in stories, 16.2 identifying cause-effect relationships implied in sentences, 17.4 identifying main ideas implied in paragraphs, and 17.5 identifying details in stories.

Normal Exceeded Retarded. -- The normal group at the intermediate level exceeded the retarded group in rate of acquisition in nine skills: Structural Analysis Skills -- 3.1 identifying components of compounds, and 4.1 identifying roots, endings, and suffixes; Dictionary Skills -- 5.3 identifying alphabetical sequences based on first, second, or third letter, 7.2 finding definitions of multiple entry words, and 8.2 selecting definitions of multiple entry words; Word Functions Skills -- 14.2 recognizing functions of verbs, 14.3 recognizing functions of adjectives, and 14.4 recognizing functions of adverbs; Comprehension Skills -- 17.2 identifying main ideas implied in stories.

Retarded Exceeded Normal. -- At the intermediate level, the retarded group did not exceed the normal group in rate of acquisition in any skills.

Intellectually Normal and Superior Groups' Achievement in the Basal Reading Skills

The research objective was to compare normal and superior groups' achievement in the basal reading skills. The specific research questions pertained to levels of acquisition and rates of acquisition of normal and superior groups who are equated on CA level and who are taught at the same reading instructional levels. Pertinent evidence is summarized below.

Level of Acquisition

The research question was the following: At the primary and intermediate reading instructional levels, do normal and superior groups differ in level of acquisition in the basal reading skills at the beginning of a 7-month instructional period?

Primary Level

No Differences. -- At the primary level, the normal and superior groups did not differ in level of acquisition in 17 skills: Phonetic Analysis Skills -- 10.1 associating vowel letters and sounds, 12.1 identifying syllables in visually presented short words, and 12.2 identifying syllables in visually presented long words; Structural Analysis Skills -- 4.1 identifying roots, endings, and suffixes, 4.4 identifying roots and multiple affixes, 4.3 locating roots by using root-change rules, and 1.1 changing roots by using root-change rules; Dictionary Skills -- 5.3 identifying alphabetical sequences based on first, second, or third letter, 6.3 using dictionary guide words, and

9.2 interpreting multiple pronunciation symbols; Word Functions Skills -- 15.1 specifying functions of nouns, 15.2 specifying functions of verbs, and 15.3 specifying functions of adjectives; Comprehension Skills -- 16.1 identifying cause-effect relationships directly stated in sentences, 19.1 interpreting similes, 19.3 interpreting hyperboles, and 19.4 interpreting personification.

Superior Exceeded Normal. -- The superior group at the primary level exceeded the normal group in level of acquisition in 30 skills: 18.1 identifying words at sight; Phonetic Analysis Skills -- 10.2 associating consonant letters and sounds, 10.3 associating consonant digraphs and sounds, 10.8 associating consonant blends and sounds, 13.1 identifying syllables in orally and visually presented short words, 13.2 identifying syllables in orally and visually presented long words, and 11.3 using spelling patterns; Structural Analysis Skills -- 3.1 identifying components of compounds, 4.2 identifying roots and prefixes, and 2.1 translating contractions; Dictionary Skills -- 5.1 identifying alphabetical sequences based on first letter, 5.2 identifying alphabetical sequences based on third letter, 7.1 finding definitions of single entry words, 7.2 finding definitions of multiple entry words, and 9.1 interpreting single pronunciation symbols; Word Functions Skills -- 14.1 recognizing functions of nouns, 14.2 recognizing functions of verbs, 14.3 recognizing functions of adjectives, 14.4 recognizing functions of adverbs; Comprehension Skills -- 17.3 identifying main ideas directly stated in paragraphs, 17.1 identifying main ideas directly stated in stories, 16.2 identifying cause-effect relationships implied in sentences, 17.4 identifying main ideas implied in paragraphs, 17.2 identifying main ideas implied in stories, 17.5 identifying details in stories, 19.2 interpreting idioms, 19.5 interpreting metaphors, 20.1 predicting outcomes and actions, 20.2 discriminating between fact and fiction, 20.3 discriminating between fact and opinion.

Normal Exceeded Superior. -- The normal exceeded the superior group at the primary level in one Word Functions Skill -- 15.4 specifying functions of adverbs.

Intermediate Level

No Differences. -- At the intermediate level, the normal and superior groups did not differ in level of acquisition in nine skills: Phonetic Analysis Skills -- 10.1 associating vowel letters and sounds, 10.2 associating consonant letters and sounds, and 10.8 associating consonant blends and sounds; Structural Analysis Skills -- 4.3 locating roots by using root-change rules, and 4.4 identifying roots and multiple affixes; Dictionary Skills -- 7.1 finding definitions of single entry words, 7.2 finding definitions of multiple entry words, and 9.2 interpreting multiple pronunciation symbols; Comprehension Skills -- 19.1 interpreting similes.

Superior Exceeded Normal. -- At the intermediate level, the superior group had the higher level of acquisition in 41 skills: 18.1 identifying words at sight; Phonetic Analysis Skills -- 10.3 associating consonant digraphs and sounds, 13.1 identifying syllables in orally and visually presented short words, 12.1 identifying syllables in visually presented short words, 13.2 identifying syllables in orally and visually presented long words, 12.2 identifying syllables in visually presented long words, and 11.3 using spelling patterns; Structural Analysis Skills -- 3.1 identifying components of compounds, 4.1 identifying roots, endings, and suffixes, 4.2 identifying roots and prefixes, 1.1 changing roots by using root-change rules, and 2.1 translating contractions; Dictionary Skills -- 5.1 identifying alphabetical sequences based on first letter, 5.2 identifying alphabetical sequences based on third letter, 5.3 identifying alphabetical sequences based on first, second, or third letter, 6.3 using dictionary guide words, 8.1 selecting definitions of single entry words, 8.2 selecting definitions of multiple entry words, and 9.1 interpreting single pronunciation symbols; Word Functions Skills -- 14.1 recognizing functions of nouns, 14.2 recognizing functions of verbs, 14.3 recognizing functions of adjectives, 14.4 recognizing functions of adverbs, 15.1 specifying functions of nouns, 15.2 specifying functions of verbs, 15.3 specifying functions of adjectives, and 15.4 specifying functions of adverbs; Comprehension

Skills -- 16.1 identifying cause-effect relationships directly stated in sentences, 17.3 identifying main ideas directly stated in paragraphs, 17.1 identifying main ideas directly stated in stories, 16.2 identifying cause-effect relationships implied in sentences, 17.4 identifying main ideas implied in paragraphs, 17.2 identifying main ideas implied in stories, 17.5 identifying details in stories, 19.2 interpreting idioms, 19.3 interpreting hyperboles, 19.4 interpreting personification, 19.5 interpreting metaphors, 20.1 predicting outcomes and actions, 20.2 discriminating between fact and fiction, and 20.3 discriminating between fact and opinion.

Normal Exceeded Superior. -- At the intermediate level, the normal group did not have the higher level of acquisition on any of the skills.

Rate of Acquisition

The research question was this: At the primary and intermediate reading instructional levels, do normal and superior groups differ in rate of acquisition in the basal reading skills during a 7-month instructional period?

Primary Level

At the primary level the normal group did not reach the task ceiling for any skill and the superior group reached the task ceiling for 5.1 identifying alphabetical sequences based on first letter; consequently, the groups' rates of acquisition on this skill were not comparable. The normal and superior subjects showed significant increments during the 7-month instructional period, in all skills.

No Differences. -- At the primary level, the normal and superior groups did not differ in rate of acquisition in 29 skills: Phonetic Analysis Skills -- 10.2 associating consonant letters and sounds, 10.8 associating consonant blends and sounds, 13.1 identifying syllables in orally and visually presented short words, 12.1 identifying syllables

in visually presented short words, 13.2 identifying syllables in orally and visually presented long words, and 11.3 using spelling patterns; Structural Analysis Skills -- 4.1 identifying roots, endings, and suffixes, 4.2 identifying roots and prefixes, 4.3 locating roots by using root-change rules, and 1.1 changing roots by using root-change rules; Dictionary Skills --5.2 identifying alphabetical sequences based on third letter, 6.3 using dictionary guide words, 7.1 finding definitions of single entry words, 7.2 finding definitions of multiple entry words, 9.1 interpreting single pronunciation symbols, and 9.2 interpreting multiple pronunciation symbols; Word Functions Skills -- 14.1 recognizing functions of nouns, 14.2 recognizing functions of verbs, 14.3 recognizing functions of adjectives, 14.4 recognizing functions of adverbs, 15.1 specifying functions of nouns, and 15.4 specifying functions of adverbs; Comprehension Skills -- 16.1 identifying cause-effect relationships directly stated in sentences, 17.3 identifying main ideas directly stated in paragraphs, 17.1 identifying main ideas directly stated in stories, 16.2 identifying cause-effect relationships implied in sentences, 17.4 identifying main ideas implied in paragraphs, 17.2 identifying main ideas implied in stories, and 17.5 identifying details in stories.

Superior Exceeded Normal. -- At the primary level, the superior group exceeded the normal group in rate of acquisition in four skills: Phonetic Analysis Skills -- 12.2 identifying syllables in visually presented long words; Dictionary Skills -- 5.3 identifying alphabetical sequences based on first, second, or third letter; Word Functions Skills -- 15.2 specifying functions of verbs, and 15.3 specifying functions of adjectives.

Normal Exceeded Superior. -- The normal subjects, at the primary level, exceeded the superior group in rate of acquisition in four skills: Phonetic Analysis Skills -- 10.3 associating consonant digraphs and sounds; Structural Analysis Skills -- 3.1 identifying components of compounds, 4.4 identifying roots and multiple affixes, and 2.1 translating contractions.

Intermediate Level

At the intermediate level, the normal and superior groups' rates of acquisition on five skills could not be compared: These skills were 10.1 associating vowel letters and sounds where there was no significant increment, 13.1 identifying syllables in orally and visually presented short words where the superior group approached the ceiling, 3.1 identifying components of compounds where the superior and normal subjects approached the ceiling, 5.1 identifying alphabetical sequences based on first letter where the normal and superior subjects approached the ceiling and no significant increment was shown, and 16.1 identifying cause-effect relationships directly stated in sentences where no significant increment was shown. For the remaining skills, the design requirements related to increments and task ceilings were satisfied and the groups' rates of acquisition could be compared.

No Differences. -- At the intermediate level, the normal and superior groups' rates of acquisition did not differ on 32 skills: Phonetic Analysis Skills -- 10.2 associating consonant letters and sounds, 10.3 associating consonant digraphs and sounds, 10.8 associating consonant blends and sounds, 12.1 identifying syllables in visually presented short words, 13.2 identifying syllables in orally and visually presented long words, 12.2 identifying syllables in visually presented long words, and 11.3 using spelling patterns; Structural Analysis Skills -- 4.1 identifying roots, endings, and suffixes, 4.2 identifying roots and prefixes, 4.4 identifying roots and multiple affixes, 1.1 changing roots by using root-change rules, and 2.1 translating contractions; Dictionary Skills -- 5.3 identifying alphabetical sequences based on first, second, or third letter, 6.3 using dictionary guide words, 7.1 finding definitions of single entry words, 7.2 finding definitions of multiple entry words, 8.1 selecting definitions of single entry words, 8.2 selecting definitions of multiple entry words, and 9.1 interpreting single pronunciation symbols; Word Functions Skills -- 14.1 recognizing functions of nouns, 14.2 recognizing functions of verbs, 14.3 recognizing functions of adjectives, 14.4 recognizing functions of

adverbs, 15.1 specifying functions of nouns, 15.2 specifying functions of verbs, and 15.3 specifying functions of adjectives; Comprehension Skills -- 17.3 identifying main ideas directly stated in paragraphs, 17.1 identifying main ideas directly stated in stories, 16.2 identifying cause-effect relationships implied in sentences, 17.4 identifying main ideas implied in paragraphs, 17.2 identifying main ideas implied in stories, and 17.5 identifying details in stories.

Superior Exceeded Normal. -- The superior group exceeded the normal group in rate of acquisition in two skills: Dictionary Skills -- 9.2 interpreting multiple pronunciation symbols; and Word Functions Skills -- 15.4 specifying functions of adverbs.

Normal Exceeded Superior. -- At the intermediate level, normal subjects exceeded the superior subjects in rate of acquisition in two skills: Structural Analysis Skills -- 4.3 locating roots by using root-change rules; and Dictionary Skills -- 5.2 identifying alphabetical sequences based on third letter.

Limitations

Factors affecting external validity or generality were described. In sum, generalizations emanating from the results of the investigation are specifically restricted to conditions similar to those under which results were obtained: e.g., consideration must be given to factors like the population sampled, the participating school personnel, the reading instructional program, the resources available to the teachers, the reading instructional levels at which pupils were taught, the particular reading skills in the chosen categories, the intellectual processes, the time periods, the instruments or tests, and the particular dimension used for identifying sequences among skills. Wider generalization will require further research.

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APPENDICES

APPENDIX A

MEANS FOR THE TOTAL PROCESSES-SEQUENCES GROUP AND THE RETARDED, NORMAL, AND SUPERIOR GROUP

Table A1

Means of the Processes-Sequences Group and Total Retarded, Normal, and Superior Group on the Spring Scores of the Reading Tests

Basal reading skill	Processes-sequences group	Retarded normal, and superior group	$\bar{Y}_i - \bar{Y}_j$
10.1 Associating vowel letters and sounds	7.71	7.56	0.15
10.2 Associating consonant letters and sounds	17.88	18.14	-0.26
10.3 Associating consonant digraphs and sounds	4.16	4.09	0.07
10.8 Associating consonant blends and sounds	17.87	17.90	-0.03
11.3 Using spelling patterns	19.85	19.54	0.31
13.1 Identifying syllables in orally and visually presented short words	13.96	14.33	-0.37
12.1 Identifying syllables in visually presented short words	12.46	12.64	-0.18
13.2 Identifying syllables in orally and visually presented long words	9.64	9.84	-0.20
12.2 Identifying syllables in visually presented long words	6.56	6.97	-0.41
3.1 Identifying components of compounds	22.34	22.04	0.30
4.1 Identifying roots, endings, and suffixes	8.43	8.35	0.08

Table A1 (Continued)

Basal reading skill	Processes-sequences group	Retarded, normal, and superior group	$\bar{Y}_i - \bar{Y}_j$
4.2 Identifying roots and prefixes	6.44	6.34	0.10
4.4 Identifying roots and multiple affixes	5.78	5.72	0.06
2.1 Translating contractions	9.25	8.85	0.40
4.3 Locating roots by using root-change rules	9.27	8.95	0.32
1.1 Changing roots by using root-change rules	6.30	6.31	-0.01
5.1 Identifying alphabetical sequences based on first letter	10.70	10.55	0.15
5.2 Identifying alphabetical sequences based on third letter	9.36	9.13	0.23
5.3 Identifying alphabetical sequences based on first, second, or third letter	7.38	7.40	-0.02
6.3 Using dictionary guide words	15.77	15.81	-0.04
7.1 Finding definitions of single entry words	7.74	7.74	0.00
7.2 Finding definitions of multiple entry words	10.33	9.98	0.35
8.1 Selecting definitions of single entry words	9.54	9.67	-0.13
8.2 Selecting definitions of multiple entry words	8.31	7.44	0.87
9.1 Interpreting single pronunciation symbols	9.22	8.60	0.62

Table A1 (Continued)

Basal reading skill	Processes-sequences group	Retarded normal, and superior group	$\bar{Y}_i - \bar{Y}_j$
9.2 Interpreting multiple pronunciation symbols	2.34	2.33	0.01
14.1 Recognizing functions of nouns	6.43	6.14	0.29
14.2 Recognizing functions of verbs	6.04	5.77	0.27
14.3 Recognizing functions of adjectives	5.36	5.24	0.12
14.4 Recognizing functions of adverbs	4.94	4.65	0.29
15.1 Specifying functions of nouns	4.47	4.46	0.01
15.2 Specifying functions of verbs	4.61	4.69	-0.08
15.3 Specifying functions of adjectives	4.23	4.32	-0.09
15.4 Specifying functions of adverbs	2.97	3.07	-0.10
16.1 Identifying cause-effect relationships directly stated in sentences	8.66	8.85	-0.19
17.3 Identifying main ideas directly stated in paragraphs	6.85	6.97	-0.12
17.1 Identifying main ideas directly stated in stories	6.02	6.18	-0.16
16.2 Identifying cause-effect relationships implied in sentences	8.78	8.96	-0.18

Table A1 (Continued)

Basal reading skill	Processes-sequences group	Retarded, normal, and superior group	$\bar{Y}_i - \bar{Y}_j$
17.4 Identifying main ideas implied in paragraphs	6.88	7.01	-0.13
17.2 Identifying main ideas implied in stories	7.08	7.14	-0.06
17.5 Identifying details in stories	13.93	14.33	-0.40
19.1 Interpreting similes	6.61	6.42	0.19
19.2 Interpreting idioms	6.05	5.66	0.39
19.3 Interpreting hyperboles	6.01	5.89	0.12
19.4 Interpreting personification	6.58	6.33	0.25
19.5 Interpreting metaphors	5.40	5.26	0.14

APPENDIX B

SPECIMEN MATERIALS FOR INFORMAL READING INVENTORY: FORM SF

Directions for Examiner

Purposes. -- The purposes of the Informal Reading Inventory are to permit the teacher to find the level at which a child should be instructed in reading and to tell the teacher whether a particular textbook is too hard or too easy for the child.

Materials. -- Scott, Foresman New Basic Readers series

Choosing Selections. -- The selections are located between pages 20 and 40 in each book and contain at least 100 words. These materials are presented in mimeographed form for use with the children.

Questions. -- Four questions are selected at reading instructional level one, and eight questions at each higher level; at least one-fourth of the questions involved thought beyond what was stated in the story. ("The story didn't tell us, but what do you think made Nancy late for the party?" "From what you have read, try to describe what you think will happen next.")

Criteria for Success. -- Comprehension - The child must understand at least three-fourths of the main ideas pertaining to the selection read; i.e., he must answer three-fourths of the questions correctly.

Word Recognition - The child must recognize 80% of the words; i.e., he must not miss more than one of each of the twenty words he reads. (This criterion includes misses both in silent reading and in oral re-reading.) Proper names and additional misses on the same word are not counted..

Determining Instructional Level. -- The reading instructional level is the highest level at which the child meets both criteria for success.

Procedures for Administering the Informal Reading Inventory. -- (1) Assemble the materials to be used. (2) Decide on a story in which the child is likely to succeed. (3) After a quick attempt at motivation, ask the child to read the selection silently. (4) As the child reads silently, record any words on which he requests help. Mark any symptoms of poor reading. Record these on the guide sheet.

(5) Ask the child questions from the selection. Record "plus" for correct answers, "minus" for incorrect answers. (6) Have the child read the same selection orally. Record any words he misses. Check symptoms of poor reading. (7) Determine whether the child satisfies both criteria for success--comprehension and word recognition. If so, take him to the next higher level book and repeat from item three. Continue until he fails. The child's reading instructional level is the highest level at which he meets both criteria. If he fails on the first selection, go to a lower level.

Informal Reading Inventory Guide Sheet. -- The guide sheet has been prepared to aid the examiner in recording the results of the informal reading inventory. All records should be kept on this guide. It may be duplicated for teacher use. One sheet will usually be sufficient for a child since up to four trials may be recorded on one form. If five or more levels are used, a second copy of the form will be necessary.

To help the examiner become oriented to the inventory guide, each section will be discussed. It will be noted that the top two lines consist of identifying data. The remaining parts of the guide are labeled alphabetically, except for the space for the examiner to enter his own name.

The examiner should fill in as much of the identifying information in the top two lines as he can at the beginning of the inventory. The name of the pupil, the date, the series of textbooks being used, and the difficulty level of the book to be used as the first trial can all be written in before the inventory is started. The examiner should be certain to record accurately the difficulty levels used at each trial. In the blank opposite number 1 should be entered the difficulty level (as 3^2 for third grade, second semester) of the first book tried. Each time, as a new level is tried, the difficulty level of the book should be entered.

Words Asked During Silent Reading. -- As the child asks for help on a word, the examiner should record that word in the appropriate space. Words asked on the first book used would be recorded in the

"Trial 1" space, and so on. These words will be counted later and entered in Summary of Word Recognition. If no words are asked, "none" in large letters should be written in the space.

Words Missed in Oral Reading. -- As the child is reading the selection orally (after the comprehension check), the examiner records words on which he requests help and words he mispronounces. The examiner may put the child's pronunciation of the mispronounced word in parentheses following the word. If the child omits a word, enter the word and put an "O" in parentheses following the word. If the child adds a word, enter the word and put an "A" in parentheses following the word. The examiner should make certain to enter the words missed in oral reading under the appropriate trial. If no words are missed, he will write "none" in large letters. (When omitted and added words are to be counted in the total words missed will be discussed in Summary of Word Recognition. They will, however, always be recorded under Words Missed in Oral Reading.)

Summary of Word Recognition. -- At the end of a trial, the examiner will enter (1) the number of words in the selection, (2) the silent words asked (taken from Words Asked During Silent Reading, counting repeated misses only one time, and not counting proper names), (3) oral words asked (taken from Words Missed in Oral Reading, counting repeated misses only one time, not counting proper names, and omitting words previously recorded under silent words missed), (4) total words missed (obtained by adding silent words missed and oral words missed--if duplicate misses were eliminated before recording number of oral words missed--that is, eliminating from the number of oral words missed any words that were previously missed in silent reading). If the total words missed is not more than 1 in 20, then S will be circled. If the total words missed is more than 1 in 20, then P will be circled.

The examiner must decide whether to count additions and omissions in the words missed. If the word added or omitted is an inconsequential word, such as a, an, or the, and really makes no difference, do not count it. Enter it under Words Missed in Oral Reading, but draw a line through it to indicate that it is unimportant. If the word added or omitted changes the meaning in any way, count it as a missed word.

In order to keep from counting in the total the same word more than once, it is a good idea to go through Words Asked During Silent Reading and Words Missed in Oral Reading and draw a light pencil line through repeated words. For instance, if thought is recorded twice under Trial 1 in Words Asked During Silent Reading and once under Trial 1 in Words Missed in Oral Reading, then the second listing in Words Asked in Silent Reading and the listing in Words Missed in Oral Reading should be crossed out by means of a line drawn through the word. This will remind the examiner to count it once only in his totals. A line may also be drawn through a proper name as a reminder not to count it in the totals.

Comprehension After Silent Reading. -- The examiner should enter a plus for each correct answer and a minus for each incorrect answer. When the questions are all answered he will circle S if as many as 3 of 4 or 6 of 8 questions are answered correctly. He will circle P, indicating "poor", if the criterion of "75 per cent comprehension" is not met.

Silent Reading Check List. -- The examiner should check each symptom of poor reading as he notes it during the silent reading of a selection. It is important to check each symptom under the correct trial because some symptoms may be in evidence at one level but not at another.

Oral Reading Check List. -- Before moving to another book, the examiner should check the symptoms of poor reading noted in the child's oral reading. Again, it is important to check the symptoms in the appropriate column. For instance, "tense or nervous" may be checked only on the failing level - where material is too difficult, and the examiner needs to be able to tell this when he looks, perhaps several days later, at the inventory guide.

Instructional Level. -- The examiner should enter the instructional level in the blank provided. The instructional level is the highest level at which both criteria for success are met. Sometimes, because of excessive faulty reading habits or symptoms, the examiner may drop to a lower level for the recommended instructional level.

Notes on Word Attack. -- The examiner should make abbreviated notes on anything discovered about the child's word attack skills. Comments such as these may be made: "leaves off word endings," "appears to break words into syllables," "spells all words," "confuses similar looking words," and "repeated several phonics principles as he tried to pronounce a silent e word."

Other Sources of Information on the Informal Reading Inventory. -- More details on this informal reading inventory are given in the following sources:

I. E. Aaron. "An Informal Reading Inventory," Elementary English, November, 1960, p. 457-460.

I. E. Aaron. Teaching Word Recognition Skills in Georgia Schools. Atlanta: Georgia State Department of Education, 1961. (See Chapter 8, "Determining the Instructional Level," p. 46-49.)

Stories Used with Subjects

(Note: The stories below were used with the subjects in administering the Informal Reading Inventory: Form SF. For space reasons, the stories are presented here in compressed form. When they were used with the subjects, each story was on one side of a separate page and each story was typed triple-spaced in pica type; the margins used here are the same as those used in the pupil's books.)

A GOOD DOG

"No, Puff, no!" said Dick.
"Go away! Go away, Puff!
Pete and I want the red ball.
You can't help us find it."

Pete said, "I see a little blue ball.
But I can't find a red one in here."

Dick said, "Where is that red ball?
I can't find it."

"Spot can!" said Pete.
"Here comes Spot with the red ball."

"Hello, Spot," said Dick.
"You are a good dog!
Thank you for the red ball."

TIME TO GO HOME

"Good-by, Miss White!" said Patty.
"I want to get home fast.
I want to read my new book."

"Good-by, Patty," said Miss White.
"Good-by, boys and girls.
Have fun with your new books."

"Good-by!" said the boys and girls.
"Good-by, Miss White."
Then out they all went.

Soon Dick and Tom came back.
"Miss White!" said Dick.
"Tom and I can't find Pete.
We did not see him come out.
Did you see which way he went?"

Miss White laughed.
"Maybe Pete did not go out," she said.
"I know where to look for him."

Soon she called, "Dick! Tom!
Here is your friend Pete."

THE BIG BOX

Bob Wills called to his friend Pete.

"Can you go to the park and play ball this morning?" asked Bob.

"Yes," said Pete, "But I have some work to do first."

Bob said, "I'll come back as soon as I take Mother's things home to her. I'll be glad to help you with the work. Then we can go to the park and play."

Soon Bob was back at Pete's house.

"What can I do to help?" asked Bob.

Pete said, "Just one thing. You can help me move this big box.

I will call one, two, three. When I call three, let's both try to move the box."

"It will be easy for both of us to move it," said Bob.

[illegible]

"Look at that blue plane, Tom," said Bill Stone. "It's only a dime. I think I'll go home and get some money out of my bank and come back and buy it. Will you go with me?"

"I can't," answered Tom Snow. "I told my mother I would come home and clean my room after school."

Bill said good-by to his friend and ran home to get a dime.

Just as Bill gave his bank a shake, his mother walked into his room.

"I wish I could open this bank," he said. "Then I could get the money out of it fast. I saw a little blue plane for a dime. It's really a good plane. So I've decided to buy it."

Bill gave his bank another shake, and a dime fell out.

FUNNY FACES

George Cook was walking up First Street, whistling. His hands were in his pockets. His cap was pushed back on his head, and he was whistling as loud as he could.

In front of one store window he stopped. There in the window he saw a bait pail. It made George think of summer and the fun he would soon have fishing with his father.

Still whistling, he went on up the street. When he came to the window of the First Street Gift Shop, he looked in.

George saw nothing in the shop window that interested him. There were just some glasses, plates, and a few other things.

All of a sudden George stopped whistling. He saw a very funny-looking boy inside the window. This boy had red hair that was falling over one eye. He had on clothes just like the clothes that George was wearing.

George suddenly knew that he was seeing himself in an old, old mirror.

He started to make faces in the mirror to see if he could look funnier still.

OUT OF THE SHELL

Kirsten walked slowly into the schoolyard. Little groups of girls were standing around, laughing and talking. Kirsten wished she felt free to join one of the groups. But she didn't.

School in this new country was all right inside the schoolroom. She didn't feel left out of things when she sat at her desk with her head behind a book. "If only we had

stayed in Denmark," she thought. There she had been part of a friendly group of girls and hadn't had to learn new ways.

Kirsten was glad when it was time to go into the school building.

THE DAY WE MADE THE ELECTRO-THINKER

"Rupert," my mother said at breakfast, "what in the world are you thinking?"

"Who? Me?" I said. "I am waiting for my Pop-O's to stop popping so I can eat them. They seem so alive when they pop."

Mom said, "But what were you dreaming about?"

"Oh, not much," I said. "I was thinking about something that is out in Miss Smithwick's alley."

"Oh dear!" Mom said. "What next?"

"What's in the alley, Rupert?" Dad said.

"Well," I said, "Miss Smithwick's old piano box is in the alley."

Mom looked at Dad and shook her head. "We are as smart as the Smedleys. Why is their Albert so smart, while our child dreams great dreams about a piano box in an alley?"

"That," Dad said, "is one for the Electro-Thinker."

This was a very good answer. An Electro-Thinker is an electric machine that can answer anything. You just feed the question into it, and it buzzes and whirs, and little lights blink, and after a while, out pops the answer.

I ate my Pop-O's and drank my milk. "Excuse me," I said.

Mom said, "Where are you going?"

"Well, to find the guys."

"And where then?"

"Mom," I said, "that's a toughie. That is one for the Electro-Thinker."

Mom looked at Dad. "Now," she said, "see what you started, Mr. Piper! Rupert, if you have any notion of cluttering up our yard with that piano box, get it right out of your head. Not when the Smedleys are back visiting in town! I won't have Mrs. Smedley thinking our son drags in things from alleys."

THE SOUND OF SUMMER RUNNING

Late that night, going home from the show with his mother and father and his brother Tom, Douglas saw the tennis shoes in the bright store window. He spun about, walking backward to watch the tennis shoes left behind.

It was June and long past time for buying the special shoes that were quiet as summer rain falling on the walks. June and the earth seemed full of raw power, and everything everywhere was in motion.

"Dad!" Douglas blurted out. "In that window back there, those Cream-Sponge Para Litefoot Shoes——"

His father didn't even turn. "Suppose you tell me why you need a new pair of sneakers. Can you do that, Douglas?"

"Well, Dad, it's hard to explain."

A SON OF INDIA

Hari Singh, farmer, lives only a scant mile from a river that flows into the great Ganges. His village has been his family's home, his father's and his grandfather's, back through many generations. Hari Singh has never lived anywhere else, and no one in his family has known any life but farm life.

In India there are thousands of families like the Singhs, who work on the land but make their home in a small community of blacksmiths and barbers, merchants, dairymen, weavers, cobblers, and day laborers. In the beginning, farmers settled near each other because they feared wild animals and roving bands of thieves. They felt safer living near other people who could help them if they had trouble. They also believed that evil spirits roamed the earth to harm people. The farmers of North India still

have these same fears. So they live in small villages for safety. They go out to their farms in the morning and return at night for food and sleep.

Questions for Stories and Answers to Questions

Primer - "A Good Dog," Fun with our Friends, pp. 24-25. 77 words (Because of reading level, fewer than 100 words are used.)

1 What did Dick and Pete want? (The red ball.)
2. What kind of ball did Pete see when he was looking for the red ball? (A blue ball.)
3. Where was the red ball? (Spot had it.)
4. What do you think Dick and Pete did next? (Accept any reasonable answer. Probably went to play ball is a logical response.)

1 - "Time to Go Home," More Fun with Our Friends, pp. 20-21. 105 words.

1. Why did Patty want to get home fast? (To read her new book.)
2. What did Miss White tell the children to do with their books? (Have fun with them.)
3. Why did Dick and Tom come back? (They couldn't find Pete.)
4. Where do you think Pete was? (Accept any reasonable answer. Probably reading his book is a logical answer.)

2^1 - "The Big Box," Friends Old and New, pp. 35-36. 122 words.

1. Where did Bob ask Pete to go? (To the park.)
2. Why did Bob want Pete to go to the park? (To play ball.)
3. What was Pete's answer when Bob asked him to go to the park? (He said he could go but he had to finish some work first.)
4. Why did Bob go home before he helped Pete with his work? (To take his mother's things to her.)
5. What job did Pete want Bob to help him do? (Move a big box.)
6. Why did Pete say he would count to three before trying to move the box? (So they would lift or push together.)
7. Did Bob and Pete live in town or in the country? (Town) How do you know? (Went to park to play.)
8. Why do you think Pete wanted to move the big box? (Accept any reasonable answer.)

2^2 - "For a Rainy Day," More Friends Old and New, pp. 25-26. 133 words.

1. What did Bill want Tom to see? (A blue plane.)
2. What did the plane cost? (A dime.)
3. Where did Bill say he would get the money to buy the plane? (Out of his bank.)

4. Why did Tom say he could not go home with Bill to get the money? (Told his mother he would come home and clean his room.)
5. Who came in the room just as Bill gave his bank a shake? (His mother.)
6. What fell out of Bill's bank when he shook it? (A dime.)
7. Do you think Bill should have taken a dime from his bank? Why? (Accept any reasonable answer.)
8. How old to you think Bill and Tom were? Why? (Accept any reasonable answer.)

3^1 - "Funny Faces," Roads to Follow, pp. 39-40. 177 words.

1. What was George doing as he walked up First Street? (Whistling.)
2. What did George first see in the store window? (A bait pail.)
3. What did the bait pail make him think about? (Summer; fun fishing with his father.)
4. What things did George see in the gift shop window? (Glasses, plates, and a few other things.) How interested was he in these? (He was not very interested in them.)
5. What caused George to stop whistling? (He saw himself in an old mirror.)
6. What did he do when he realized it was a mirror he saw? (He made faces in the mirror.)
7. Why do you suppose George was walking down the street whistling? (Accept any reasonable answer.)
8. Why do you suppose George made faces in the mirror? (Accept any reasonable answer.)

3^2 - "Out of Her Shell," More Roads to Follow, p. 20.
100 words

1. What did Kirsten see when she came into the schoolyard? (Little groups of girls.)
2. What did Kirsten wish? (That she felt free to join one of the groups of girls.)
3. What were the girls doing? (Laughing and talking.)
4. Why did Kirsten feel that she couldn't join the girls? (She was new in this country.)
5. When did she feel she was not left out? (When she sat at her desk with her head behind a book.)
6. From what country did Kirsten come? (From Denmark.)
7. Why was Kirsten glad it was time to go into the school building? (She would feel at home at her desk.)
8. Why do you think the girls did not invite Kirsten to join them? (Accept any reasonable answer.)

4 - "The Day We Made the Electro-Thinker," Ventures. p. 38. 182 words.

1. Who is Rupert? (The one who is telling the story.)
2. What do you think Pop-O's are? (Breakfast food.)
3. What did Rupert's mother ask him? (What he was thinking.)
4. What was Rupert thinking about? (An old piano box in the alley.)
5. Did Rupert's Mother think he was as smart as Albert Smedley? (No.) How do you know? (Mother asked why Albert was so smart while her son dreams about a piano box in an alley.)
6. What is an Electro-Thinker? (Electric machine that can answer anything.)
7. Do you think there is such a thing as an Electro-Thinker? Why? (Accept any reasonable answer. Child may describe a computer. If he gives logical explanation, accept it as correct.)
8. What sort of person do you think Rupert was? Why do you answer as you do? (Accept any reasonable answer.)

5 - "The Sound of Summer Running." Vistas. pp. 27-28 (Through three paragraphs on p. 28.) 118 words.

1. What did Douglas see in the bright store window? (Tennis shoes.)
2. How did he feel about the shoes? (He wanted them.)
3. What time of the year was it? (June; late spring or early summer.)
4. Just as Douglas saw the shoes, what did he do? (He spun around and walked backwards so he could watch the shoes.)
5. When Douglas started to talk about the shoes to his Dad, what did his father say? ("Tell me why you need a new pair of sneakers.")
6. What was Douglas' answer? ("It's hard to explain.")
7. How do you think Douglas could have explained to his father why he needed the shoes? (Accept any reasonable answer.)
8. The writer stated: "June and the earth seemed full of raw power, and everything everywhere was in motion." Explain what he meant. (Accept any reasonable answer.)

6 - "A Son of India," Calvacades, pp. 35-36 (Complete paragraph at top of page.) 167 words.

1. What was Hari Singh's occupation? (Farmer.)
2. Where was his home located? (About a mile from a river that flows into the Ganges.) (If child answers "in a village," then ask him where the village was located.)
3. How long have members of the Singh family lived in the same village? (For many generations.) (If child answers "for a long time," then ask him how he knows this. This will lead him to answer correctly if he remembers the correct answer.)
4. Why in the beginning did farmers in North India settle near each other? (Because they were afraid of wild animals and thieves.)

5. Why do the farmers of North India still live in small villages? (They still have the same fears their forefathers had -- wild animals, thieves, evil spirits.)
6. What are some of the occupations of people who live in the villages of North India? (Farming, barbering, blacksmithing, merchanting, dairying, weaving, cobbling, day laboring.) (If the child cites three of these, give him credit for the question.)
7. How do you think Hari Singh would feel if he moved to a large city? Why? (Accept any answer indicating he would be insecure because of the strangeness. ". . . no one in his family has known any life but farm life.")
8. Why do you think these farmers of North India believe that evil spirits roam the earth to harm people? (Accept any reasonable answer, such as that they had this belief passed on to them by their parents and that they are relatively isolated from the outside world.)

Informal Reading Inventory
Guide Sheet

Name:_____ Date:_____ (U.GA.Reading Clinic Form 7)

Series:_____ Trial Levels: 1_____, 2_____, 3_____, 4_____

A. WORDS ASKED DURING SILENT READING:

Trial 1	Trial 2	Trial 3	Trial 4

B. WORDS MISSED IN ORAL READING:

Trial 1	Trial 2	Trial 3	Trial 4

C. SUMMARY OF WORD RECOGNITION:

	Trial 1	Trial 2	Trial 3	Trial 4
Words in Selection				
Silent Words asked				
Oral words missed				
TOTAL WORDS MISSED				
Satis. or Poor	S P	S P	S P	S P

D. COMPREHENSION AFTER SILENT READ:

Trial 1	Trial 2	Trial 3	Trial 4
1._____	1._____	1._____	1._____
2._____	2._____	2._____	2._____
3._____	3._____	3._____	3._____
4._____	4._____	4._____	4._____
5._____	5._____	5._____	5._____
6._____	6._____	6._____	6._____
7._____	7._____	7._____	7._____
8._____	8._____	8._____	8._____
SP	SP	SP	SP

E. SILENT READING CHECK LIST:

1	2	3	4	
				Moves lips, no sound
				Whispers
				Points at words
				Book held too close
				Book held too far away
				Appears tense
				Moves head
				Reads slowly

F. ORAL READING CHECK LIST:

1	2	3	4	
				Word-by-word reader
				Inappropriate phrasing
				Ignores Punctuation
				Many mispronunciations
				Faulty enunciation
				Monotonous voice
				High-pitched voice
				Tense or nervous
				Excessive repetitions
				Loses place
				Poor sight vocabulary
				Context guesses wrong
				Poor word attack skills
				Reads slowly
				Skips words
				Adds words
				Reads too fast
				Unknown words not tried

G. INSTRUCTIONAL LEVEL:_____

H. NOTES ON WORD ATTACK:

Examiner:_____

APPENDIX C

INFERENTIAL STATISTICS: SUBJECT VARIABLES

Table A2

Retarded and Normal Groups: Analyses of Variance for IQ, MA, CA, and Reading Achievement Level

A. Subjects Organized by Reading Instructional Levels 2, 3, 4, 5

Source of variation	df	Mean squares IQ	MA	CA	Reading level
Groups	1	47,437.04**	118.52	166,278.00**	0.46
Levels	3	18.02	11,806.89**	17,039.71**	91.86**
GxL	3	135.71	13.31	767.71	0.13
Error	208	59.88	48.35	552.50	0.48

B. Subjects Organized by Primary and Intermediate Reading Instructional Levels

Source of variation	df	Mean squares IQ	MA	CA	Reading level
Groups	1	47,437.04**	118.52	166,278.00**	0.46
Levels	1	41.78	28,566.00**	41.638.89**	204.17**
GxL	1	14.00	16.67	2,047.34	0.02
Error	212	60.66	174.22	588,00	0.81

**P of F <.01

Table A3

Retarded and Normal Groups: Mean Separation for Multigroup Comparisons Yielding Significant F ratios

A. Subjects Organized by Reading Instructional Levels 2, 3, 4, 5

Variable	Comparison	df	$\bar{X}_i - \bar{X}_j$	F ratio	Relationship
MA	2:3	106	10.22	3.138**	2<3
	3:4	106	11.78	4.822**	3<4
	4:5	106	12.22	4.762**	4<5
CA	2:3	106	11.78	1.905*	2<3
	3:4	106	14.59	2.054*	3<4
	4:5	106	14.57	1.870*	4<5
Reading level	2:3	106	0.81	7.665**	2<3
	3:4	106	0.83	5.999**	3<4
	4:5	106	1.41	9.163**	4<5

*P <.05; **P <.01: one-tailed tests in all comparisons

Table A4

Retarded and Normal Groups: Chi Square Analyses of Distributions of Males and Females

Organized by R.I.L. 2, 3, 4, 5			Organized by primary and intermediate R.I.L.		
R.I.L.	df	Chi square	R.I.L.	df	Chi square
2(R:N)	1	0.00			
3(R:N)	1	0.00	P(R:N)	1	0.00
4(R:N)	1	0.30	I(R:N)	1	0.15
5(R:N)	1	1.89			
Σ	4	2.19	Σ	2	0.15

Table A2

Retarded and Normal Groups: Analyses of Variance for IQ, MA, CA, and Reading Achievement Level

A. Subjects Organized by Reading Instructional Levels 2, 3, 4, 5

Source of variation	df	Mean squares IQ	MA	CA	Reading level
Groups	1	47,437.04**	118.52	166,278.00**	0.46
Levels	3	18.02	11,806.89**	17,039.71**	91.86**
GxL	3	135.71	13.31	767.71	0.13
Error	208	59.88	48.35	552.50	0.48

B. Subjects Organized by Primary and Intermediate Reading Instructional Levels

Source of variation	df	Mean squares IQ	MA	CA	Reading level
Groups	1	47,437.04**	118.52	166,278.00**	0.46
Levels	1	41.78	28,566.00**	41.638.89**	204.17**
GxL	1	14.00	16.67	2,047.34	0.02
Error	212	60.66	174.22	588,00	0.81

**P of F <.01

Table A5

Normal and Superior Groups: Analyses of Variance for IQ, MA, CA, and Reading Achievement Level

A. Subjects Organized by Reading Instructional Levels 2, 3, 4, 5

Source of variation	df	Mean squares IQ	MA	CA	Reading level
Groups	1	35,655.15**	38,869.64**	73.48	58.83**
Levels	3	33.63	16,322.37**	10,942.00**	90.19**
GxL	3	85.79	626.14**	31.81	6.49**
Error	192	50.58	68.60	124.86	0.73

B. Subjects Organized by Primary and Intermediate Reading Instructional Levels

Source of variation	df	Mean squares IQ	MA	CA	Reading level
Groups	1	35,655.15**	38,869.64**	73.48	58.83**
Levels	1	0.72	37,950.13**	24,619.81**	178.61**
GxL	1	14.11	936.52**	19.67	0.31
Error	196	51.60	131.28	164.56	1.28

**P of F <.01

Table A6

Normal and Superior Groups: Mean Separation for Multigroup Comparisons Yielding Significant F ratios

A. Subjects Organized by Reading Instructional Levels 2, 3, 4, 5

Variable	Comparison	df	$\bar{X}_i - \bar{X}_j$	t ratio	Relationship
MA	2:3	98	13.28	3.937**	2<3
	3:4	98	12.42	4.224**	3<4
	4:5	98	16.98	4.489**	4<5
	2(N:S)	48	21.19	9.398**	N<S
	3(N:S)	48	26.07	14.480**	N<S
	4(N:S)	48	26.66	14.642**	N<S
	5(N:S)	48	37.97	11.129**	N<S
CA	2:3	98	12.64	12.936**	2<3
	3:4	98	9.38	9.244**	3<4
	4:5	98	12.98	4.351**	4<5
Reading level	2:3	98	1.48	6.497**	2<3
	3:4	98	0.54	2.030*	3<4
	4:5	98	1.22	6.354**	4<5
	2(N:S)	48	0.32	1.671	N=S
	3(N:S)	48	2.00	6.387**	N<S
	4(N:S)	48	1.25	4.268**	N<S
	5(N:S)	48	0.76	5.089**	N<S

Table A6 (Continued)

B. Subjects Organized by Primary and Intermediate Reading Instructional Levels

Variable	Comparison	df	$\bar{X}_i - \bar{X}_j$	t ratio	Relationship
MA	P(N:S)	98	23.63	11.787**	N<S
	I(N:S)	98	32.38	11.982**	N<S

*P <.05; **P <.01: one-tailed tests in all comparisons except one set -- reading achievement level, N:S at each reading instructional level.

Table A7

Normal and Superior Groups: Chi Square Analyses of Distributions of Males and Females

Organized by R.I.L. 2, 3, 4, 5			Organized by primary and intermediate R.I.L.		
R.I.L.	df	Chi square	R.I.L.	df	Chi square
2(N:S)	1	2.71			
3(N:S)	1	0.35	P(N:S)	1	0.5485
4(N:S)	1	0.00	I(N:S)	1	0.2510
5(N:S)	1	0.48			
Σ	4	3.54	Σ	2	0.7995

APPENDIX D

SOME GUIDES FOR TEACHING BASAL READING EFFECTIVELY

A. Time

1. Take adequate time to teach thoroughly the comprehension and word perception skills. (Two or three teaching periods will be necessary for each selection in the basal reader, in most instances. A skill that is introduced does not have to be mastered completely before moving on because it will be reviewed and extended in later selections. The teacher must use his own judgment to decide when to add additional practice and when to rely on what the guidebook will suggest later for the additional practice.)

2. Follow the approximate time schedule suggested for your particular teaching levels in teaching basal reading. (A suggested minimum time to be devoted to basal reading instruction will be discussed with you. This does not have to be followed rigidly each day, but the amount of time devoted to basal reading instruction should be followed on a weekly basis. This is necessary for comparative purposes.)

B. Use of Basal Readers

3. Teach children in basal readers that are suited to their reading levels. (If reading instruction is to be effective, instructional materials must be appropriate for the reading levels of the children using them. This means that superior readers will sometimes need to use basal readers labeled at grade levels above the level of the grade in which the children are located. It also means that some children will need basal readers labeled at grade levels below the level of the grade in which they are placed.)

4. Read in advance all selections in each basal reader used in the basal reading program. (For effective introduction of a selection as well as effective checking on comprehension, the teacher must know the stories and informational articles contained in the basal readers.)

5. Keep the basal reader at school and place it in the children's hands only when it is needed for instructional purposes. (The basal reading period should be a well-planned and dynamic period. If the teacher is to raise questions during the readiness phase and have the children read in terms of these purposes, he must raise these questions before the selection has been read by the children. Interest is also killed by advance knowledge of the story.)

C. Use of Guidebooks

6. Study the guidebook lesson plan thoroughly before attempting to teach the directed reading lesson. (In order to teach the skills worked into a selection, the teacher must know well the authors' intended pattern for teaching.)

7. Deviate from the guidebook lesson plan when deviation is needed to improve instruction. (Lesson plans in the guidebooks should be adapted to meet the known needs of the children being taught Whenever children need more or less in the way of exercises, the teacher should modify the plan.)

8. Know the basal reading skills and how to teach them efficiently and effectively so that instruction may be modified to overcome lesson plan omissions in suggested skill practices. (The lesson plans in their entirety present a sequence for teaching the skills and a reasonably adequate number of exercises for teaching the skills. Sometimes guidebooks do not offer enough suggestions for developing certain of the comprehension or word perception skills. This usually is in the way of suggested repetition for skill mastery. The teacher must know enough to "fill the gaps" when they occur. In the fourth, fifth, and sixth grade guidebooks, a section of additional exercises for word perception practice is included.)

9. Teach the basal reading skills thoroughly within the framework of the adopted basal reader series so that systematic coverage of a second publisher's series on the same difficulty levels as the first series will not be necessary. (It should not be necessary at any grade level or with any group of children to work systematically through another publisher's materials. A few copies of each of several different publishers' materials may be used for guided reading to put into practice skills that have been learned, but the guidebooks will not be used in this practice.)

D. Teaching the Directed Reading Lesson

10. Adapt the time spent in building readiness for a given selection to the children's backgrounds and the particular selection being used. (Occasionally, it may be necessary to spend more time - or less time - than is suggested in the guidebook. The guidebook gives suggested activities that may be used in introducing the story, and this must be adapted to the particular children being taught. If the children have adequate backgrounds of understanding and sufficient interest, then a quick buildup is all that is needed. If they lack sufficient understanding background, then this must be built prior to the reading.)

11. Introduce in the readiness phase of the lesson only those new words that the children cannot recognize for themselves. (If the children have an adequate background for figuring out words for themselves, then the words should be left for them to attack in context. Usually the guide will give a clue to suggested procedure to follow.)

12. Have the children read silently before they read orally. (This is suggested in the guidebook and should also be followed at all times.)

13. Ask different types of questions in checking on comprehension in order to develop a variety of comprehension skills. (The guidebook gives a variety of questions that may be used, but the teacher will want to add additional questions where they appear to be needed; that is, when he is sure that for his children these suggested questions are insufficient for developing all of the important comprehension skills.)

14. Vary the purposes of re-reading a selection in order to develop a variety of comprehension skills. (Children read in terms of purposes they set or the teacher sets for them. As the teacher completes the readiness phase of the lesson plan -- "Establishing Background," Grades 1-3 or "Introducing the Selection," Grades 4-6, he suggests a purpose for reading. If the teacher almost always suggests reading for the same purpose, such as getting the main idea, only that one skill will be developed.)

15. Use follow-up activities only if they have educational value and contribute to the development of reading skills, understandings, or appreciations. (Good follow-up activities are based on individual interests and needs. They often will be additional skill practice or suggested personal reading for the children.)

16. Supplement basal reading materials generously with recreational and informational materials. (As soon as children build up a sufficient skill background to permit them to read on their own, they should be encouraged to read interesting books independently. This permits the child to put into practice skills that have been taught him. It also helps to develop an interest in reading. The teacher's guidebooks contain numerous suggestions for related books that may be used with children. A bibliography of high interest, low vocabulary books will be given each teacher participating in the project.)

E. Use of Think-and-Do Books

17. Correct exercises as soon as possible and discuss results with children. (If exercises are to serve the purpose for which they were designed, they must be corrected soon after the children

have completed them, and the errors must be reviewed with the children so they can correct their mistaken ideas. The sooner this can be done after an exercise is completed, the more effective the exercise will be as a teaching device.)

18. Become thoroughly familiar with exercises, including purposes they are intended to serve, before using them with children. (We need to review the purposes for using a particular exercise and the exercise itself before it is used in instruction. The purposes of the exercise will be found in the guidebook and also in more detail at the bottom of the page in the teacher's edition of the Think-and-Do Book.)

APPENDIX E

SKILLS ASSESSED IN THE STUDY AND COMPARABLE SKILLS IN THE SCOTT, FORESMAN NEW BASIC READERS PROGRAM

In the skills listed below, the lettered items are the six skill groupings followed in this study, and the 50 numbered skills are those that were assessed in the study. Presented beneath each of the numbered skills are the comparable skills used in the Scott, Foresman New Basic Readers program.

A. Identifying Words at Sight

1. Identifying Words at Sight

a. Perceiving relationships between spoken and written language

b. Strengthening memory of word forms

c. (All other word perception skills may also contribute to the development of this particular skill.)

B. Phonetic Analysis Skills

1. Associating Vowel Letters and Sounds

a. Developing ability in phonetic analysis

1) Perceiving and imaging vowel sounds in words

2) Associating vowel sounds and letters

b. Developing phonetic understandings

1) A vowel letter represents more than one sound

2) Different letters may represent the same vowel sound

3) A vowel letter may represent no sound

4) Different spelling patterns may represent the same vowel sound

5) The same spelling pattern may represent more than one vowel sound

2. Associating Consonant Letters and Sounds

a. Developing ability in phonetic analysis

1) Perceiving and imaging consonant sounds in words

2) Associating consonant sounds and letter symbols

b. Developing phonetic understandings

1) A consonant letter may represent more than one sound

2) The same consonant sound may be represented by more than one letter

3) A consonant letter may represent no sound

3. Associating Consonant Digraphs and Sounds

a. Developing ability in phonetic analysis

1) Perceiving and imaging consonant sounds in words

2) Associating consonant sounds and letters

b. Developing phonetic understandings

1) Two like consonant letters together in a word represent one consonant sound

2) Some consonant sounds are represented by two-letter consonant symbols

3) A two-letter consonant symbol may represent more than one sound

4) A consonant letter may represent no sound

4. Associating Consonant Blends and Sounds

a. Developing ability in phonetic analysis

1) Perceiving and imaging consonant sounds in words

2) Associating consonant sounds and letters

3) Blending consonant sounds in words

5. Using Spelling Patterns

a. Developing ability in phonetic analysis

1) Using visual clues to vowel sounds in one-syllable words

2) Using spelling patterns as clues to vowel sounds in one-syllable words

b. Developing phonetic understandings

1) A consonant letter (or two-letter consonant symbol) may represent more than one sound

2) The same consonant sound may be represented by more than one letter

3) A vowel letter represents more than one sound

4) A letter may represent no sound in a word

5) Different spelling patterns may represent the same vowel sound

6) The same spelling pattern may represent more than one sound

7) A syllable is a word or part of a word in which a vowel sound is heard

8) Spelling patterns that function as clues in one-syllable words may also function as clues to vowel sounds in accented syllables

9) Spelling patterns that function as clues to vowel sounds in accented syllables of two-syllable words also function as clues to vowel sounds in accented syllables of multisyllabic words

10) Spelling patterns that function as clues to vowel sounds in syllables with a primary accent also function in syllables with a secondary accent

6. Identifying Syllables in Orally and Visually Presented Short Words

a. Perceiving syllables in spoken words

b. Understanding that a syllable is a word or part of a word in which a vowel sound is heard

7. Identifying Syllables in Visually Presented Short Words

a. Using spelling patterns as clues to the number of syllables in a word

b. Understanding that a syllable is a word or part of a word in which a vowel sound is heard

8. Identifying Syllables in Orally and Visually Presented Long Words

   a. Perceiving syllables in spoken words

   b. Understanding that a syllable is a word or part of a word in which a vowel sound is heard

9. Identifying Syllables in Visually Presented Long Words

   a. Using spelling patterns as clues to the number of syllables in a word

   b. Understanding that a syllable is a word or part of a word in which a vowel sound is heard

C. Structural Analysis Skills

1. Identifying Components of Compounds

   a. Identifying compounds made up of two known root words

   b. Identifying root words in inflected, derived, or compounded forms

   c. Identifying unfamiliar root words in inflected, derived, or compounded forms

2. Identifying Roots, Endings, and Suffixes

   a. Understanding structural changes made by adding s, 's, ed, or ing to known words

   b. Identifying root words in inflected, derived, or compounded forms

   c. Identifying unfamiliar root words in inflected, derived, or compounded forms

   d. Understanding structural changes made by adding endings, suffixes, or prefixes to known root words

3. Identifying Roots and Prefixes

   a. Identifying root words in inflected, derived, or compounded forms

   b. Identifying unfamiliar root words in inflected, derived, or compounded forms

   c. Understanding structural changes made by adding endings, prefixes, or suffixes to known root words

4. Identifying Roots and Multiple Affixes

   a. Identifying root words in inflected, derived, or compounded forms

   b. Identifying unfamiliar root words in inflected, derived, or compounded forms

   c. Understanding structural changes made by adding endings, prefixes, or suffixes to known root words

5. Translating Contractions

   a. Identifying contractions

6. Locating Roots by Using Root-change Rules

   a. Identifying root words in inflected, derived, or compounded forms

   b. Identifying unfamiliar root words in inflected, derived, or compounded forms

   c. Understanding structural changes made by adding endings, prefixes, or suffixes to known root words

7. Changing Roots by Using Root-change Rules

   a. Identifying root words in inflected, derived or compounded forms

   b. Identifying unfamiliar root words in inflected, derived, or compounded forms

   c. Understanding structural changes made by adding endings, prefixes, or suffixes to known root words

D. Dictionary Skills

1. Identifying Alphabetical Sequences Based on First Letter

   a. Developing dictionary skills and understandings

      1) Recognizing alphabetical sequence or general alphabetical position

2. Identifying Alphabetical Sequences Based on Third Letter

   a. Developing dictionary skills and understandings

      1) Recognizing alphabetical sequence or general alphabetical position

3. Identifying Alphabetical Sequences Based on First, Second, or Third Letter

   a. Developing dictionary skills and understandings

      1) Recognizing alphabetical sequence or general alphabetical position

4. Using Dictionary Guide Words

   a. Developing dictionary skills and understandings

      1) Recognizing alphabetical sequence or general alphabetical position

      2) Locating entries: using guide words

5. Finding Definitions of Single Entry Words

   a. Developing dictionary skills and understandings

      1) Recognizing alphabetical sequence or general alphabetical position

      2) Understanding that a printed word may represent more than one meaning

      3) Using context to select appropriate defined meaning

      4) Locating entries: using guide words

6. Finding Definitions of Multiple Entry Words

   a. Developing dictionary skills and understandings

      1) Recognizing alphabetical sequence or general alphabetical position

      2) Understanding that a printed word may represent more than one meaning

      3) Using context to select appropriate defined meaning

      4) Locating entries: using guide words

7. Selecting Definitions of Single Entry Words

   a. Developing dictionary skills and understandings

      1) Recognizing alphabetical sequence or general alphabetical position

2) Understanding that a printed word may represent more than one meaning

3) Using context to select appropriate defined meaning

4) Locating entries: using guide words

8. Selecting Definitions of Multiple Entry Words

a. Developing dictionary skills and understandings

1) Recognizing alphabetical sequence or general alphabetical position

2) Understanding that a printed word may represent more than one meaning

3) Using context to select appropriate defined meaning

4) Locating entries: using guide words

9. Interpreting Single Pronunciation Symbols

a. Developing dictionary skills and umderstandings

1) Using a pronunciation key to interpret dictionary symbols

10. Interpreting Multiple Pronunciation Symbols

a. Developing dictionary skills and understandings

1) Using a pronunciation key to interpret dictionary symbols

E. Word Functions Skills (Scott, Foresman skills under 1-8 are the same.)

1. Recognizing Functions of Nouns

2. Recognizing Functions of Verbs

3. Recognizing Functions of Adjectives

4. Recognizing Functions of Adverbs

5. Specifying Functions of Nouns

6. Specifying Functions of Verbs

7. Specifying Functions of Adjectives

8. Specifying Functions of Adverbs

a. Using clues to meanings of printed words:

1) Understanding meaning and function of words

2) Understanding meaning and function of words and affixes

3) Using context and word analysis to identify printed words

4) Using context clues

5) Classifying words by meaning and function

F. Comprehension Skills

1. Identifying Cause-effect Relationships Directly Stated in Sentences

a. Noting or recalling details and perceiving their relationship for the purpose of locating specific information, forming or verifying an opinion, or proving a point.

b. Comprehending phrase and sentence meaning

c. Perceiving relationships: cause-effect

2. Identifying Cause-effect Relationships Implied in Sentences

a. Noting or recalling details and perceiving their relationship for the purpose of making or checking inferences

1) Grasping ideas implied but not directly stated

b. Comprehending phrase and sentence meaning

c. Perceiving relationships: cause-effect

3. Identifying Main Ideas Directly Stated in Stories

a. Grasping main idea

b. Noting or recalling details and perceiving their relationship for the purpose of identifying story problem and/or solution

1) Locating specific information, forming or verifying an opinion, or proving a point

c. Identifying author's or illustrator's purpose or point of view

4. Identifying Main Ideas Implied in Stories

a. Grasping main idea

b. Noting or recalling details and perceiving their relationship for the purpose of identifying story problem and/or solution

1) Making or checking inferences

2) Grasping ideas implied but not directly stated

3) Anticipating action or outcome

4) Making judgments or drawing conclusions

5) Generalizing

5. Identifying Main Ideas Directly Stated in Paragraphs

a. Grasping main idea

b. Noting or recalling details and perceiving their relationship for the purpose of locating specific information, forming or verifying an opinion, or proving a point

6. Identifying Main Ideas Implied in Paragraphs

a. Grasping main idea

b. Noting or recalling details and perceiving their relationship for the purpose of making or checking inferences

1) Grasping ideas implied but not directly stated

2) Anticipating action or outcome

3) Making judgments or drawing conclusions

4) Generalizing

7. Identifying Details in Stories

a. Noting or recalling details and perceiving their relationship for the purpose of locating specific information, forming or verifying an opinion, or proving a point

8. Interpreting Similes

   a. Identifying elements of style

      1) Figurative, idiomatic, or picturesque language

      2) Colloquialism, slang, and dialect

   b. Interpreting figurative, idiomatic, or picturesque language

   c. Identifying and evaluating author's purpose and the techniques used to achieve his purpose

   d. Simile

      1) Creating similes

      2) Humorous similes

      3) Use of similes

      4) Identifying and reacting to similes

      5) Recognizing colloquial similes

9. Interpreting Idioms

   a. Identifying elements of style

      1) Figurative, idiomatic, or picturesque language

      2) Colloquialism, slang, and dialect

   b. Interpreting figurative, idiomatic, or picturesque language

   c. Identifying and evaluating the author's purpose and the techniques used to achieve his purpose

10. Interpreting Hyperboles

   a. Identifying elements of style

      1) Figurative, idiomatic, or picturesque language

   b. Interpreting figurative, idiomatic, or picturesque language

   c. Identifying and evaluating author's purpose and the techniques used to achieve his purpose

d. Tall tales: exaggeration in

e. Exaggeration: as element of style
purpose of

11. Interpreting Personification

a. Identifying and evaluating elements of style used by an author

1) Figurative, idiomatic, or picturesque language

b. Identifying and evaluating author's purpose and the techniques used to achieve his purpose

c. Metaphor: personification as metaphor

12. Interpreting Metaphors

a. Identifying elements of style: figurative, idiomatic, or picturesque language

b. Identifying and evaluating the author's purpose and the techniques used to achieve his purpose

c. Interpreting figurative, idiomatic, or picturesque language

d. Metaphor: extended metaphor in poetry
personification as metaphor

13. Predicting Outcomes and Actions

a. Interpretation

1) Noting or recalling details and perceiving their relationships for the purpose of anticipating actions or outcomes

14. Discriminating Between Fact and Fiction

a. Interpretation

1) Noting or recalling details and perceiving their relationships for the purpose of grasping ideas implied but not directly stated

15. Discriminating Between Fact and Opinion

a. Interpretation

1) Noting or recalling details and perceiving their relationships for the purpose of locating specific information, forming or verifying an opinion, or proving a point

APPENDIX F

SUMMARY: RELIABILITY COEFFICIENTS

Table A8

Reliability Coefficients for Basal Reading Skills and Intellectual Processes

Skill/process	Score: # and name	# items per half	r_{ii}
Identifying words at sight	18.1 Sight vocabulary	24-24	.95
Associating vowel letters and sounds	10.1 Phonics sounds: vowels	5-5	.42
Associating consonant letters and sounds	10.2 Phonics sounds: single consonants	10-10	.69
Associating consonant digraphs and sounds	10.3 Phonics sounds: consonant digraphs	3-3	.73
Associating consonant blends and sounds	10.8 Phonics sounds: consonant blends	11-11	.98
Using spelling patterns	11.3 Phonics principles	17-17	.87
Identifying syllables in orally and visually presented short words	13.1 Finding syllables--auditory: 1 to 3 syllable words	8-8	.88
Identifying syllables in visually presented short words	12.1 Finding syllables--visual: 1 to 3 syllable words	8-8	.88
Identifying syllables in orally and visually presented long words	13.2 Finding syllables--auditory: 4 to 6 syllable words	8-8	.92
Identifying syllables in visually presented long words	12.2 Finding syllables--visual: 4 to 6 syllable words	8-8	.91
Identifying components of compounds	3.1 Finding roots in compounds	12-12	.96

Table A8 (Continued)

Skill/process	Score: # and name	# items per half	r_{ii}
Identifying roots, endings, and suffixes	4.1 Finding roots in inflected and derived forms: no root change	6-6	.75
Identifying roots and prefixes	4.2 Finding roots in inflected and derived forms: prefixes	5-5	.95
Identifying roots and multiple affixes	4.4 Finding roots in inflected and derived forms: more than one affix	4-4	.84
Translating contractions	2.1 Meaning of contractions	6-6	.94
Locating roots by using root-change rules	4.3 Finding roots in inflected and derived forms: root changes	7-7	.95
Changing roots by using root-change rules	1.1 Adding endings or suffixes: root changes	7-7	.94
Identifying alphabetical sequences based on first letter	5.1 Alphabetizing words: by first letter	6-6	.64
Identifying alphabetical sequences based on third letter	5.2 Alphabetizing words: by third letter	6-6	.71
Identifying alphabetical sequences based on first, second, or third letter	5.3 Alphabetizing words: by first, second, or third letter	6-6	.76
Using dictionary guide words	6.3 Dictionary guide words	15-15	.73

Table A8 (Continued)

Skill/process	Score: # and name	# items per half	r_{ii}
Finding definitions of single entry words	7.1 Finding definitions: single entry words	6-6	.89
Finding definitions of multiple entry words	7.2 Finding definitions: multiple entry words	8-8	.82
Selecting definitions of single entry words	8.1 Selecting definitions: single entry words	8-8	.89
Selecting definitions of multiple entry words	8.2 Selecting definitions: multiple entry words	6-6	.76
Interpreting single pronunciation symbols	9.1 Pronunciation symbols: single symbols	8-8	.82
Interpreting multiple pronunciation symbols	9.2 Pronunciation symbols: multiple symbols	4-4	.73
Recognizing functions of nouns	14.1 Word group identification: nouns	6-6	.75
Recognizing functions of verbs	14.2 Word group identification: verbs	6-6	.81
Recognizing functions of adjectives	14.3 Word group identification: adjectives	6-6	.76
Recognizing functions of adverbs	14.4 Word group identification: adverbs	6-6	.76
Specifying functions of nouns	15.1 Word group anticipation: nouns	6-6	.60
Specifying functions of verbs	15.2 Word group anticipation: verbs	6-6	.75
Specifying functions of adjectives	15.3 Word group anticipation: adjectives	6-6	.60
Specifying functions of adverbs	15.4 Word group anticipation: adverbs	6-6	.50

Table A8 (Continued)

Skill/process	Score: # and name	# items per half	r_{ii}
Identifying cause-effect relationships directly stated in sentences	16.1 Sentence Meaning: direct statement	6-6	.67
Identifying main ideas directly stated in paragraphs	17.3 Paragraph meaning: main idea--paragraph	6-6	.79
Identifying main ideas directly stated in stories	17.1 Paragraph Meaning: main idea--story	6-6	.59
Identifying cause-effect relationships implied in sentences	16.2 Sentence meaning: implied meaning	6-6	.78
Identifying main ideas implied in paragraphs	17.4 Paragraph meaning: Implied idea--paragraph	6-6	.70
Identifying main ideas implied in stories	17.2 Paragraph meaning: Implied idea--story	6-6	.68
Identifying details in stories	17.5 Paragraph meaning: details	12-12	.78
Interpreting similies	19.1 Figurative language: similes	4-4	.44
Interpreting idioms	19.2 Figurative language: idioms	4-4	.76
Interpreting hyperboles	19.3 Figurative language: exaggeration	4-4	.71
Interpreting personification	19.4 Figurative language: personification	4-4	.80
Interpreting metaphors	19.5 Figurative language: metaphors	4-4	.69

Table A8 (Continued)

Skill/process	Score: # and name	# items per half	r_{ii}
Conceptualization	IP.1 Word grouping	13-12	.72
Associative memory	IP.2 Word number	10-10	.64
Verbal meaning	IP.3 Word meaning	15-15	.70
Reasoning	IP.4 Number series	25-25	.95

APPENDIX G

SUMMARY: CHARACTERISTICS OF READING TESTS AND SUBTESTS

Figure A1

Summary: Characteristics of Reading Tests and Subtests

Category	Skill	Score	Instructional span	Possible score
Identifying Words at Sight	Identifying words at sight	18.1 Sight vocabulary	Pp - 6	48
Phonetic Analysis Skills	Associating vowel letters and sounds	10.1 Phonics sounds: vowels	2^1 - 3^2	10
	Associating consonant letters and sounds	10.2 Phonics sounds: single consonants	Pp^{2-3} - 3^2	20
	Associating consonant digraphs and sounds	10.3 Phonics sounds: consonant digraphs	1 - 3^1	6
	Associating consonant blends and sounds	10.8 Phonics sounds: consonant blends	1 - 3^1	22
	Using spelling patterns	11.3 Phonics principles	2^1 - 6	34
	Identifying syllables in orally and visually presented short words	13.1 Finding syllables--auditory: 1-3 syllable words	3^1 - 6	16
	Identifying syllables in visually presented short words	12.1 Finding syllables--visual: 1-3 syllable words	3^1 - 6	16

Figure A1 (Continued)

Category	Skill	Score	Instructional span	Possible score
Phonetic Analysis Skills (Continued)	Identifying syllables in orally and visually presented long words	13.2 Finding syllables--auditory: 4-6 syllable words	3^1 - 6	16
	Identifying syllables in visually presented long words	12.2 Finding syllables--visual: 4-6 syllable words	3^1 - 6	16
Structural Analysis Skills	Identifying components of compounds	3.1 Finding roots in compounds	1 - 6	24
	Identifying roots, endings, and suffixes	4.1 Finding roots in inflected and derived forms: no root change	P - 6	12
	Identifying roots and prefixes	4.2 Finding roots in inflected and derived forms: prefixes	2^1 - 6	10
	Identifying roots and multiple affixes	4.4 Finding roots in inflected and derived forms: more than one affix	2 - 6	8
	Translating contractions	2.1 Meaning of contractions	$1,2^1,2^2$ - 6	12
	Locating roots by using root-change rules	4.3 Finding roots in inflected and derived forms: root changes	$2^1,2^2,3^1$ - 6	14
	Changing roots by using root-change rules	1.1 Adding endings or suffixes: root changes	$2^1,2^2,3^1$ - 6	14

Figure A1 (Continued)

Category	Skill	Score	Instructional span	Possible score
	Identifying alphabetical sequences based on first letter	5.1 Alphabetizing words: by first letter	2^2 - 6	12
	Identifying alphabetical sequences based on third letter	5.2 Alphabetizing words: by third letter	2^2 - 6	12
	Identifying alphabetical sequences based on first, second, or third letter	5.3 Alphabetizing words: by first, second, or third letter	2^2 - 6	12
Dictionary Skills	Using dictionary guide words	6.3 Dictionary guide words	3^1 - 6	30
	Finding definitions of single entry words	7.1 Finding definitions: single entry words	3^1 - 6	12
	Finding definitions of multiple entry words	7.2 Finding definitions: multiple entry words	3^1 - 6	16
	Selecting definitions of single entry words	8.1 Selecting definitions: single entry words	3^2 - 6	16
	Selecting definitions of multiple entry words	8.2 Selecting definitions: multiple entry words	3^2 - 6	12
	Interpreting single pronunciation symbols	9.1 Pronunciation symbols: single symbols	3^1 - 6	16
	Interpreting multiple pronunciation symbols	9.2 Pronunciation symbols: multiple symbols	3^1 - 6	8

Figure A1 (Continued)

Category	Skill	Score	Instructional span	Possible score
Word Functions Skills	Recognizing functions of nouns	14.1 Word group identification: nouns	Pp - 6	12
	Recognizing functions of verbs	14.2 Word group identification: verbs	Pp - 6	12
	Recognizing functions of adjectives	14.3 Word group identification: adjectives	Pp - 6	12
	Recognizing functions of adverbs	14.4 Word group identification: adverbs	Pp - 6	12
	Specifying functions of nouns	15.1 Word group anticipation: nouns	Pp - 6	12
	Specifying functions of verbs	15.2 Word group anticipation: verbs	Pp - 6	12
	Specifying functions of adjectives	15.3 Word group anticipation: adjectives	Pp - 6	12
	Specifying functions of adverbs	15.4 Word group anticipation: adverbs	Pp - 6	12
Comprehension Skills	Identifying cause-effect relationships directly stated in sentences	16.1 Sentence meaning: direct statement	Pp - 6	12
	Identifying main ideas directly stated in paragraphs	17.3 Paragraph meaning: main idea--paragraph	Pp - 6	12

Figure A1 (Continued)

Category	Skill	Score	Instructional span	Possible score
	Identifying main ideas directly stated in stories	17.1 Paragraph meaning: main idea--story	Pp - 6	12
	Identifying cause-effect relationships implied in sentences	16.2 Sentence meaning: implied meaning	Pp - 6	12
	Identifying main ideas implied in paragraphs	17.4 Paragraph meaning: implied idea--paragraph	Pp - 6	12
	Identifying main ideas implied in stories	17.2 Paragraph meaning: implied idea--story	Pp - 6	12
	Identifying details in stories	17.5 Paragraph meaning: details	Pp - 6	24
Comprehension Skills (Continued)	Interpreting similes	19.1 Figurative language: similes	2^1 - 6	8
	Interpreting idioms	19.2 Figurative language: idioms	2^1 - 6	8
	Interpreting hyperboles	19.3 Figurative language: exaggeration	2^1 - 6	8
	Interpreting personification	19.4 Figurative language: personification	2^1 - 6	8
	Interpreting metaphors	19.5 Figurative language: metaphors	2^1 - 6	8

APPENDIX H

SPECIMEN TEST AND CONTENT DESCRIPTION:
IDENTIFYING WORDS AT SIGHT

#18 Sight Vocabulary

Content Description: Test #18 Sight Vocabulary

1. **Test Name:** 18.1 Sight Vocabulary

   Label for Skill: Identifying words at sight

   Definition of Skill: Ability to recognize and pronounce words presented visually by means of a rapid exposure device

   Instructional Span: Introduced, Pp; reviewed, each subsequent reading instructional level to 6

   Possible Score: 48

   Name and Location of Elements Tested:

Words from reading instructional level 1:	Items 1 to 8
Words from reading instructional level 2:	Items 9 to 16
Words from reading instructional level 3:	Items 17 to 24
Words from reading instructional level 4:	Items 25 to 32
Words from reading instructional level 5:	Items 33 to 40
Words from reading instructional level 6:	Items 41 to 48

SIGHT VOCABULARY -- Score Sheet

Name _____ Date _____ Score _____

Teacher _____ School _____ Examiner _____

Directions and Procedures

I want to see how many words you can pronounce. When I show you a card with a word on it, read that word to me aloud. You will not know some of these words. So don't worry if you don't get them all right. (Expose words to subjects at about a 1-second rate. Cease the test when he misses 8 consecutive words. Mark + for correct; - for incorrect.)

_____ 1. time	_____17. envelope	_____33. persistent
_____ 2. park	_____18. invention	_____34. ambitious
_____ 3. story	_____19. curious	_____35. eventual
_____ 4. found	_____20. difference	_____36. incredible
_____ 5. pony	_____21. important	_____37. altitude
_____ 6. train	_____22. electric	_____38. perception
_____ 7. from	_____23. discover	_____39. impetuous
_____ 8. splash	_____24. continue	_____40. economic
_____ 9. heard	_____25. decisive	_____41. alacrity
_____10. wonder	_____26. ravenous	_____42. radiate
_____11. sudden	_____27. appropriate	_____43. contiguous
_____12. terrible	_____28. volunteer	_____44. ecstatic
_____13. window	_____29. reference	_____45. relinquish
_____14. hard	_____30. dilemma	_____46. automatic
_____15. tomorrow	_____31. visible	_____47. element
_____16. second	_____32. allegiance	_____48. capitulate

APPENDIX I

SPECIMEN TESTS AND CONTENT DESCRIPTIONS: PHONETIC ANALYSIS SKILLS

#10 Phonics Sounds
#11 Phonics Principles
#12 Finding Syllables--Visual
#13 Finding Syllables--Auditory

Content Description: Test #10 Phonics Sounds

1.	Subtest Name:	10.1 Phonics Sounds: Vowels
	Label for Skill:	Associating vowel letters and sounds
	Definition of Skill:	Associating vowel letters and sounds when sounds are presented in isolation
	Instructional Span:	Introduced, 2^1; reviewed, through 3^2
	Possible Score:	10
	Elements Tested:	Long and short vowels
	Location of Elements:	Items 3, 8, 11, 17, 19, 28, 39, 46, 51, 60
2.	Subtest Name:	10.2 Phonics Sounds: Single Consonants
	Label for Skill:	Associating consonant letters and sounds
	Definition of Skill:	Associating consonant letters and sounds when sounds are presented in isolation
	Instructional Span:	Introduced, Pp^{2-3}; reviewed, through 3^2
	Possible Score:	20
	Elements Tested:	g (hard), m, r, h, s, y, c (s), w, l, n, g (j), c (k), p, v, k, t, d, f, j, b
	Location of Elements:	Items 1, 6, 7, 10, 15, 20, 23, 27, 29, 32, 34, 35, 42, 43, 44, 48, 52, 54, 55, 56
3.	Subtest Name:	10.3 Phonics Sounds: Consonant Digraphs
	Label for Skill:	Associating consonant digraphs and sounds
	Definition of Skill:	Associating consonant digraphs and sounds when sounds are presented in isolation
	Instructional Span:	Introduced, 1; reviewed, 2^1, 3^1
	Possible Score:	6
	Elements Tested:	gn, th (voiceless), ph, ch, th (voiced), wh
	Location of Elements:	Items 5, 24, 33, 37, 40, 59

Content Description (Continued)

4. Subtest Name: 10.8 Phonics Sounds: Consonant Blends

Label for Skill:	Associating consonant blends and sounds
Definition of Skill:	Associating consonant blends and sounds when sounds are presented in isolation
Instructional Span:	Introduced, 1; reviewed, 2[1], 3[1]
Possible Score:	22
Elements Tested[1]:	tr, dw, sk, qu, bl, pr, sp, cr, sn, fl, sm, pl, tw, sh, gl, br, cl, wr, sw, gr, fr, sl, dr, st
Location of Elements:	Items 2, 4, 9, 12, 13, 14, 16, 18, 21, 22, 25, 26, 30, 31, 36, 38, 41, 45, 47, 49, 50, 53, 57, 58

[1]When the coding formats were being prepared, sh was classified erroneously as a blend. It was paired with dw and eliminated from the analyses.

Directions For Examiner

Test #10 Phonics Sounds

Step 1

BEGIN NOTE TO TEACHER

(Distribute test booklets to pupils. Have them fill in the identifying information -- name, etc. -- on the cover sheet. When this is completed, start the tape recorder.)

END NOTE TO TEACHER

Step 2

In this test, you are to find the letter or letters that stand for the sounds I make and then draw a line under these letters. Look at the example below and listen carefully to the directions.

Example

1.	z - (as in zebra)-z	w	x	y	(z)
2.	kl-(as in Klondike)-kl	kr	bl	br	(kl)

Look at the first row of letters in the example. You have the letters w, x, y, z. I'll say the sound of one of these letters. Your job is to find and draw a line under the letter which stands for the sound I say. Which letter stands for: z -- (as in zebra) -- z. (The words in parenthesis were not pronounced. They were used to cue the examiner.) (Pause) The letter z (as in zebra) is like the z (as in zebra) in the word, zip. Draw a line under the letter z because it stands for z (as in zebra). Look at the second row in the example. You have this group of letters: kr, bl, br, kl. Which letters stand for: kl -- (as in Klondike) -- kl? Draw a line under them. (Pause) What are the letters you drew a line under? (Pause) kl. The letters kl stand for kl (as in Klondike) like the kl (as in Klondike) in the word, Kleenex. I am pronouncing these more precisely than the sounds would be in words, but this should not mislead you.

BEGIN NOTE TO TEACHER

(Stop the tape recorder at this point. Then say:)

Don't look at the test items until you are told to do so.

(Now check to see if the pupils know what to do, how to mark the answers, etc. Then ask:)

Do you understand how you are to write your answers?

(Answer any questions the pupils ask about how their test answers are to be recorded, but avoid teaching the skill being measured by this test. When questions are answered, turn on the tape recorder to finish the instructions. You have a short pause of about 8-10 seconds on the tape.)

END NOTE TO TEACHER

Step 3

I will say the sounds only two times. You will have only a very few seconds to draw a line under the correct set of letters before I go to the next one, so listen carefully and work quickly. You may not know some of these sounds, but do as many as you can and try to do your best. Don't worry if you don't know them all.

Step 4

We are ready to begin. Turn the page and I will say the sounds for you.

BEGIN NOTE TO TEACHER

(Stop the tape recorder at this point. You have 10 to 20 seconds space on the tape before the next set of directions begins.)

END NOTE TO TEACHER

Name_____ Grade_____

Teacher_____ School_____

Test #10

PHONICS SOUNDS

Directions

In this test, you are to find the letters which stand for the sounds I make and then draw a line under these letters.

Look at the example below and listen carefully to the directions.

Example

---

1. w x y z
2. kr bl br kl

DO NOT TURN THE PAGE
UNTIL TOLD TO DO SO.

1.	g	p	t	v
2.	pr	tw	br	tr
3.	e	i	o	u
4.	dw	tw	tr	dr
5.	ng	cr	gn	ln
6.	n	b	v	m
7.	r	v	t	w
8.	a	e	o	i
9.	st	sh	sk	sl
10.	h	j	t	g
11.	a	e	u	o
12.	kl	gn	qu	ng
13.	bl	cl	fl	pl
14.	br	pr	pl	dr
15.	s	t	b	
16.	pr	st	br	sp
17.	a	u	o	y
18.	kw	ch	cr	gr
19.	a	e	i	o
20.	x	z	y	w
21.	sm	st	sw	sn
22.	fl	fr	bl	pr
23.	b	c	d	k
24.	wh	tr	th	sh
25.	sn	sw	st	sm
26.	bl	sl	pl	cl
27.	u	w	v	y
28.	a	y	o	u
29.	s	l	m	n
30.	dw	pr	tw	st

DO NOT TURN THE PAGE UNTIL TOLD TO DO SO.

31.	th	st	sh	sl
32.	t	m	b	n
33.	ph	th	ch	wh
34.	f	g	t	h
35.	c	t	b	d
36.	pl	fl	gr	gl
37.	ch	sh	st	th
38.	cr	br	pr	gr
39.	e	o	i	a
40.	th	sh	tw	tr
41.	bl	pl	cl	sl
42.	b	d	k	p
43.	y	v	x	w
44.	k	p	t	z
45.	tr	br	wr	gr
46.	e	i	o	u
47.	tw	sl	tr	sw
48.	d	b	t	k
49.	kr	gr	br	gw
50.	fr	pr	fl	pl
51.	a	o	e	u
52.	b	p	k	d
53.	sm	bl	sl	cl
54.	f	b	p	k
55.	h	j	k	f
56.	k	p	d	b
57.	dw	br	dr	pr
58.	sc	sl	sp	st
59.	tw	wh	th	sh
60.	a	i	e	o

Content Description: Test #11 Phonics Principles

1. **Subtest Name:** 11.3 Phonics Principles

Label for Skill: Using spelling patterns

Definition of Skill: Using consonant-vowel-consonant spelling patterns as clues to pronouncing vowel sounds in one-syllable words, polysyllabic words with accented first syllables, and polysyllabic words with accented final syllables

Instructional Span: Introduced, 2^1, 3^1; reviewed, each subsequent reading instructional level to 6

Possible Score: 34

Elements Tested:

Rule #	Rule	R.I.L., Rule Introduced
1	A single vowel letter followed by one or more consonant letters in a one-syllable word or accented final syllable is a clue to a short vowel sound.	2^1
2	Two vowel letters together in a word is a clue to a long vowel sound.	2^1
3	A single vowel letter followed by one consonant letter and final e in a one-syllable word or accented final syllable is a clue to a long vowel sound.	2^1
4	A single vowel letter followed by two consonant letters and final e is a clue to a short vowel sound.	2^1
5	The letter r in a spelling pattern preceded by a vowel is a clue to the r-controlled vowel sound.	2^1
6	A single vowel letter at the end of a one-syllable word or accented final syllable is a clue to a long vowel sound.	2^1

Content Description (Continued)

Rule #	Rule	R.I.L., Rule Introduced
7	The letter a followed by l, w, or u in a one-syllable word or an accented syllable is a clue to the vowel sound of all.	2[1]
8	The letter i followed by gh is a clue to a long vowel sound.	2[1]
9	Two consonant letters following the first vowel letter in a two-syllable word with an accented first syllable is a clue to a short vowel sound.	3[1]
10	One consonant letter following the first vowel letter in a two-syllable word with an accented first syllable is a clue to a long vowel sound.	3[1]
11	One consonant letter between a single vowel letter and final le is a clue to the vowel sound of able.	3[1]

Location of Elements:

Rule #	Item #	Rule #	Item #
1	1, 12, 23, 29	7	7, 18, 28, 34
2	2, 13, 24, 30	8	8, 19
3	3, 14, 25, 31	9	9, 20
4	4, 15	10	10, 21
5	5, 16, 26, 32	11	11, 22
6	6, 17, 27, 33		

Directions For Examiner

Test #11 Phonics Principles

Step 1

BEGIN NOTE TO TEACHER

(Distribute test booklets to pupils. Have them fill in the identifying information -- name, etc. -- on the cover sheet. When this is completed, start the tape recorder.)

END NOTE TO TEACHER

Step 2

In this test, you will be given a number of nonsense words. They are just like words, but they are not real words. You are to look at the nonsense word and think how it should be said. Then you are to decide which one of the four sounds I give you stands for one particular letter in the nonsense word. Look at the example below and listen carefully to the directions.

Example

A. cag -- a has the same sound as:	B. cra-cli -- i has the same sound as:
___ 1. a in ark	___ 1. i in ill
(X) 2. a in at	___ 2. i in charity
___ 3. a in say	___ 3. i in fir
___ 4. a in all	(X) 4. i in kite

Look at the first example. The first word you see is the nonsense word, c-a-g (the words are spelled, not pronounced). Think how you should pronounce this word. The a in this word has the same sound as the a in which of the following words: a in ark, a in at, a in say, or a in all? (Pause) The a in the nonsense word has the same sound as the a in at. Put an X on the blank line in front of number 2, a in at.

Now, let's try the second example to be sure you understand what to do. That word is c-r-a-c-l-i. Look at the nonsense word and think how it should be said. The i in this word has the same sound as the i in which of the following words: i in ill, i in kite, i in fir or i in charity. Put an X on the blank line in front of the correct sound. (Pause) What is the right answer? (Pause) The i in the nonsense word has the same sound as the i in kite. The blank line in front of number 4 should have an X on it.

BEGIN NOTE TO TEACHER

(Stop the tape recorder at this point. Then say:)

Don't look at the test items until you are told to do so.

(Now check to see if the pupils know what to do, how to mark the answers, etc. Then ask:)

Do you understand how you are to write your answers?

(Answer any questions the pupils ask about how their test answers are to be recorded, but avoid teaching the skill being measured by this test. When questions are answered, turn on the tape recorder to finish the instructions. You have a short pause of about 8-10 seconds on the tape.)

END NOTE TO TEACHER

Step 3

I will read each question to you. You will have only a few seconds to mark the correct letter before I go on to the next one, so listen carefully and work quickly. You may not know some of these sounds, but do as many as you can and try to do your best. Don't worry if you don't know them all.

Step 4

We are ready to begin. Turn the page and I will read the first question.

BEGIN NOTE TO TEACHER

(Stop the tape recorder at this point. You have 10 to 20 seconds space on the tape before the next set of directions begins.)

END NOTE TO TEACHER

Name_____ Grade_____

Teacher_____ School_____

Test #11

PHONICS PRINCIPLES

Directions

In this test, you will be given a number of nonsense words. They are just like words, but they are not real words. You are to look at the nonsense word and think how it should be said. Then you are to decide which one of the four sounds I give you stands for one particular letter in the nonsense word. Look at the example below and listen carefully to the directions.

Example

A. cag -
a has the same sound as:

_____1. a in ark

_____2. a in at

_____3. a in say

_____4. a in all

B. cra-clí -
i has the same sound as:

_____1. i in ill

_____2. i in charity

_____3. i in fir

_____4. i in kite

DO NOT TURN THE PAGE UNTIL TOLD TO DO SO

1. buk -
u has the same sound as:

____A. u in cute

____B. u in fur

____C. u in true

____D. u in up

2. aih -
a has the same sound as:

____A. a in ark

____B. a in at

____C. a in say

____D. a in all

3. gise -
i has the same sound as:

____A. i in ill

____B. i in kite

____C. i in fir

____D. i in charity

4. nince -
i has the same sound as:

____A. i in ill

____B. i in kite

____C. i in fir

____D. i in charity

5. bir -
i has the same sound as:

____A. i in ill

____B. i in kite

____C. i in fir

____D. i in charity

6. sni -
i has the same sound as:

____A. i in ill

____B. i in kite

____C. i in fir

____D. i in charity

7. dal -
a has the same sound as:

____A. a in ark

____B. a in at

____C. a in say

____D. a in all

8. digh -
i has the same sound as:

____A. i in ill

____B. i in kite

____C. i in fir

____D. i in charity

9. mollut -
o has the same sound as:

____A. o in work

____B. o in for

____C. o in odd

____D. o in go

10. detul -
e has the same sound as:

____A. e in key

____B. e in set

____C. e in her

____D. e in maker

11. utle -
u has the same sound as:

____A. u in cute

____B. u in fur

____C. u in true

____D. u in up

12. fec -
e has the same sound as:

____A. e in key

____B. e in set

____C. e in her

____D. e in maker

13. oag -
o has the same sound as:

____A. o in work

____B. o in for

____C. o in odd

____D. o in go

14. thune -
u has the same sound as:

____A. u in cute

____B. u in fur

____C. u in true

____D. u in up

15. ludge -
u has the same sound as:

____A. u in cute

____B. u in fur

____C. u in true

____D. u in up

16. cor -
o has the same sound as:

____A. o in work

____B. o in for

____C. o in odd

____D. o in go

17. bro -
o has the same sound as:

____A. o in work

____B. o in for

____C. o in odd

____D. o in go

18. jal -
a has the same sound as:

____A. a in ark

____B. a in at

____C. a in say

____D. a in all

19. righ -
i has the same sound as:

____A. i in ill

____B. i in kite

____C. i in fir

____D. i in charity

20. willo -
i has the same sound as:

____A. i in ill

____B. i in kite

____C. i in fir

____D. i in charity

21. riso -
i has the same sound as:

____A. i in ill

____B. i in kite

____C. i in fir

____D. i in charity

22. eble -
e has the same sound as:

____A. e in key

____B. e in set

____C. e in her

____D. e in maker

23. to-lak´ -
a has the same sound as:

____A. a in ark

____B. a in at

____C. a in say

____D. a in all

24. eaf -
e has the same sound as:

____A. e in key

____B. e in set

____C. e in her

____D. e in maker

25. e-lade´ -
a has the same sound as:

____A. a in ark

____B. a in at

____C. a in say

____D. a in all

26. sar -
a has the same sound as:

____A. a in ark

____B. a in at

____C. a in say

____D. a in all

27. lac-co´ -
o has the same sound as:

____A. o in work

____B. o in for

____C. o in odd

____D. o in go

28. vaw -
a has the same sound as:

____A. a in ark

____B. a in at

____C. a in say

____D. a in all

29. sa-tec´ -
e has the same sound as:

____A. e in key

____B. e in set

____C. e in her

____D. e in maker

30. tay -
a has the same sound as:

____A. a in ark

____B. a in at

____C. a in say

____D. a in all

31. num-brote´ -
o has the same sound as:

____A. o in work

____B. o in for

____C. o in odd

____D. o in go

32. der -
e has the same sound as:

____A. e in key

____B. e in set

____C. e in her

____D. e in maker

33. a-cu' -
u has the same sound as:

____A. u in cute

____B. u in fur

____C. u in true

____D. u in up

34. waw -
a has the same sound as:

____A. a in ark

____B. a in at

____C. a in say

____D. a in all

Content Description: Test #12 Finding Syllables--Visual

Reading Instructional Level of the Material

The skill, identifying syllables, was introduced at reading instructional level 3^1 and reviewed through reading instructional level 6. The words used in the test were words with which pupils were judged to be unfamiliar and which were judged to be beyond the reading instructional level 6 difficulty level.

1.	Subtest Name:	12.1 Finding Syllables--Visual: 1- to 3-Syllable Words
	Label for Skill:	Identifying syllables in visually presented short words
	Definition of Skill:	Identifying syllables in words consisting of three syllables or less presented visually
	Instructional Span:	Introduced, 3^1; reviewed, 3^2, 5, 6
	Possible Score:	16

Name and Location of Elements Tested[1]:

Words with one syllable:	Items 2, 11, 18, 21, 25, 34
Words with two syllables:	Items 4, 12, 15, 23, 26, 31
Words with three syllables:	Items 6, 10, 14, 19

---

[1] Two words had to be omitted from the data analyses for the auditory-visual form of the subtest (13.1) because of difficulties in test administration. These two words were # 30 sanguineness and # 33 encrinite. They were omitted here from the visual form of the subtest because of the intent to keep the two subtests identical.

Content Description (Continued)

2. Subtest Name: 12.2 Finding Syllables--Visual: 4- to 6-Syllable Words

Label for Skill: Identifying syllables in visually presented long words

Definition of Skill: Identifying syllables in words consisting of four or more syllables presented visually

Instructional Span: Introduced, 3[1]; reviewed, 3[2], 5, 6

Possible Score: 16

Name and Location of Elements Tested[1]:

Words with four syllables: Items 3, 8, 13, 24, 28, 35

Words with five syllables: Items 1, 9, 17, 22

Words with six syllables: Items 5, 7, 16, 20, 27, 36

[1]Two words had to be omitted from the data analyses for the auditory-visual form of the subtest (13.2) because of difficulties in test administration. These two words were # 29 allantoic and # 32 hendecahedron. They were omitted here from the visual form of the subtest because of the intent to keep the two subtests identical.

Directions For Examiner

Test #12 Finding Syllables--Visual

Step 1

BEGIN NOTE TO TEACHER

(Distribute test booklets to pupils. Have them fill in the identifying information -- name, etc. -- on the cover sheet. When this is completed, start the tape recorder.)

END NOTE TO TEACHER

Step 2

In this test, you are to find the number of syllables in a word. Look at the example below and listen carefully to the directions.

Example

Word	Number of Syllables
prolixity	4
banter	2
chard	(1)

Look at the words in the list. Look at the first word. How many syllables does it have? (Pause) Four. The first word has four syllables. The number has been written on the line by the first word. Look at the second word. How many syllables does it have? (Pause) Two. The number two is written on the line by the second word. Now try the third word. Write the number of syllables in this word on the line. (Pause) What number did you write? One. The third word has one syllable.

BEGIN NOTE TO TEACHER

(Stop the tape recorder at this point. Then say:)

Don't look at the test items until you are told to do so.

(Now check to see if the pupils know what to do, how to mark the answers, etc. Then ask:)

Do you understand how you are to write your answers?

(Answer any questions the pupils ask about how their test answers are to be recorded, but avoid teaching the skill being measured by this test. When questions are answered, turn on the tape recorder to finish the instructions. You have a short pause of about 8-10 seconds on the tape.)

END NOTE TO TEACHER

Step 3

You have 6 minutes to complete the test.

There may be some of these that you do not know. Just do as many as you can and try to do your best; don't worry if you don't know them all.

Step 4

Now turn the page and begin.

BEGIN NOTE TO TEACHER

(Stop the tape recorder at this point. You have 10 to 20 seconds space on the tape before the next set of directions begins.)

END NOTE TO TEACHER

Name_____ Grade_____

Teacher_____ School_____

Test #12

FINDING SYLLABLES--VISUAL

Directions

In this test, you are to find the number of syllables in a word. Look at the example below and listen carefully to the directions.

Example

Word	Number of Syllables
prolixity	4
banter	2
chard	

DO NOT TURN THE PAGE
UNTIL TOLD TO DO SO.

1. oneirocritic _____
2. manse _____
3. gypsophila _____
4. aglet _____
5. perambulatory _____
6. barbarize _____
7. thalamencephalon _____
8. paniculate _____
9. infelicity _____
10. heptagon _____
11. cloy _____
12. hussar _____
13. planimetry _____
14. canescent _____
15. saffron _____
16. epexegetical _____
17. cupromagnesite _____
18. coir _____
19. saltigrade _____
20. chemotherapeutics _____
21. keir _____
22. epeirogenic _____
23. nitrous _____
24. keratinous _____
25. glebe _____
26. hachure _____
27. ultimogeniture _____
28. rugosity _____
29. allantoic _____
30. sanguineness _____
31. umlaut _____
32. hendecahedron _____
33. encrinite _____
34. chay _____
35. declivity _____
36. palatalization _____

Content Description: Test #13 Finding Syllables--Auditory

1. **Subtest Name:** 13.1 Finding Syllables--Auditory: 1- to 3-Syllable Words

   Label for Skill: Identifying syllables in orally and visually presented short words

   Definition of Skill: Identifying syllables in words consisting of three syllables or less presented both visually and orally

   Instructional Span: Introduced, 3^1; reviewed, 3^2, 5, 6

   Possible Score: 16

   Name and Location of Elements:

   The words used here and the order in which they were presented were identical with the words and order used in Subtest 12.1, Finding Syllables--Visual: 1-3 Syllable Words. That is, the test materials were replicated. The difference between the tests was this: in the present (auditory-visual) form, the words were pronounced while the pupils looked at them.

2. **Subtest Name:** 13.2 Finding Syllables--Auditory: 4- to 6-Syllable Words

   Label for Skill: Identifying syllables in orally and visually presented long words

   Definition of Skill: Identifying syllables in words consisting of four or more syllables presented both orally and visually

   Instructional Span: Introduced, 3^1; reviewed, 3^2, 5, 6

   Possible Score: 16

   Name and Location of Elements:

   The words used here and the order in which they were presented were identical with the words and order used in Subtest 12.2, Finding Syllables--Visual: 4-6 Syllable Words. That is, the test materials were replicated. The difference between the tests was this: in the present (auditory-visual) form, the words were pronounced while the pupils looked at them.

Directions For Examiner

Test #13 Finding Syllables--Auditory

Step 1

BEGIN NOTE TO TEACHER

(Distribute test booklets to pupils. Have them fill in the identifying information -- name, etc. -- on the cover sheet. When this is completed, start the tape recorder.)

END NOTE TO TEACHER

Step 2

In this test, you are to find the number of syllables in a word. Look at the example below and listen carefully to the directions.

Example

Word	Number of Syllables
prolixity	4
banter	2
chard	(1)

Look at the words in the list. Look at the first word. It is prolixity. How many syllables does it have? (Pause) Four. The first word has four syllables. The number four has been written on the line by the first word, prolixity. Look at the second word -- banter. How many syllables does it have? (Pause) Two. The number two is written on the line by the second word, banter. Now try the third word -- chard. Write the number of syllables in this word on the line. (Pause) What number did you write? One. The third word, chard, has one syllable. These are the same words you had on your last test. But this time I'll pronounce them for you. Listen carefully. I'll pronounce each word twice.

BEGIN NOTE TO TEACHER

(Stop the tape recorder at this point. Then say:)

Don't look at the test items until you are told to do so.

(Now check to see if the pupils know what to do, how to mark the answers, etc. Then ask:)

Do you understand how you are to write your answers?

(Answer any questions the pupils ask about how their test answers are to be recorded, but avoid teaching the skill being measured by this test. When questions are answered, turn on the tape recorder to finish the instructions. You have a short pause of about 8-10 seconds on the tape.)

END NOTE TO TEACHER

Step 3

There may be some of these that you do not know. Just do as many as you can and try to do your best; don't worry if you don't know them all.

Step 4

Now turn the page and I will say the words for you.

BEGIN NOTE TO TEACHER

(Stop the tape recorder at this point. You have 10 to 20 seconds space on the tape before the next set of directions begins.)

END NOTE TO TEACHER

Name_____ Grade_____

Teacher _____ School_____

Test #13

FINDING SYLLABLES--AUDITORY

Directions

In this test, you are to find the number of syllables in a word. Look at the example below and listen carefully to the directions.

Example

Word	Number of Syllables
prolixity	4
banter	2
chard	

DO NOT TURN THE PAGE
UNTIL TOLD TO DO SO.

1. oneirocritic _____
2. manse _____
3. gypsophila _____
4. aglet _____
5. perambulatory _____
6. barbarize _____
7. thalamencephalon _____
8. paniculate _____
9. infelicity _____
10. heptagon _____
11. cloy _____
12. hussar _____
13. planimetry _____
14. canescent _____
15. saffron _____
16. epexegetical _____
17. cupromagnesite _____
18. coir _____
19. saltigrade _____
20. chemotherapeutics _____
21. keir _____
22. epeirogenic _____
23. nitrous _____
24. keratinous _____
25. glebe _____
26. hachure _____
27. ultimogeniture _____
28. rugosity _____
29. allantoic _____
30. sanguineness _____
31. umlaut _____
32. hendecahedron _____
33. encrinite _____
34. chay _____
35. declivity _____
36. palatalization _____

APPENDIX J

SPECIMEN TESTS AND CONTENT DESCRIPTIONS:
STRUCTURAL ANALYSIS SKILLS

#3 Finding Roots in Compounds
#2 Meaning of Contractions
#4 Finding Roots in Inflected and Derived Forms
#1 Adding Endings or Suffixes

Content Description: Test #3 Finding Roots in Compounds

1. Test Name: 3.1 Finding Roots in Compounds

   Label for Skill: Identifying components of compounds

   Definition of Skill: Identifying component parts in compound words

   Instructional Span: Introduced, 1; reviewed, each subsequent reading instructional level to 6 with reviews at reading instructional levels 5 and 6 being optional

   Possible Score: 24

   Name and Location of Elements Tested:

   Compound words from R.I.L. 1: Group 1

   Compound words from R.I.L. 2: Group 2

   Compound words from R.I.L. 3: Group 3

   Compound words from R.I.L. 4: Group 4

   Compound words from R.I.L. 5: Group 5

   Compound words from R.I.L. 6: Group 6

Directions For Examiner

Test #3 Finding Roots in Compounds

Step 1

BEGIN NOTE TO TEACHER

(Distribute test booklets to pupils. Have them fill in the identifying information -- name, etc. -- on the cover sheet. When this is completed, start the tape recorder.)

END NOTE TO TEACHER

Step 2

In this test, you are to find the two root words in each compound word. Look at the example below and listen carefully to the directions.

Example

Group A

---

1. playhouse
2. doghouse
3. playpen

Look at the list of words; the first word is playhouse. Playhouse is a compound word. Look at the line drawn between the words play and house. This line divides play and house and tells us what the two words are that make the compound. Now look at the second word -- doghouse. What are the two words which make this compound? (Pause) Yes. Dog and house. Where should the line be drawn? (Pause) Between the g and the h. Try to make your line carefully, because these letters are very close together. Now, let's do the third word. What is it? It's playpen. What are the two words that make this compound? They are play and pen. Where should the line be drawn? It should be drawn between the y and the p. If you have not drawn the line between y and p, do so now.

BEGIN NOTE TO TEACHER

(Stop the tape recorder at this point. Then say:)

Don't look at the test items until you are told to do so.

(Now check to see if the pupils know what to do, how to mark the answers, etc. Then ask:)

Do you understand how you are to write your answers?

(Answer any questions the pupils ask about how their test answers are to be recorded, but avoid teaching the skill being measured by this test. When questions are answered, turn on the tape recorder to finish the instructions. You have a short pause of about 8-10 seconds on the tape.)

END NOTE TO TEACHER

Step 3

You have 1 minute to complete the test.

There may be some of these that you do not know. Just do as many as you can and try to do your best; don't worry if you don't know them all.

Step 4

You will work with six groups of compound words. When you finish with Group 1, go on to Group 2, and the other groups until you finish all six groups. You may turn the page now and begin.

BEGIN NOTE TO TEACHER

(Stop the tape recorder at this point. You have 10 to 20 seconds space on the tape before the next set of directions begins.)

END NOTE TO TEACHER

TESTS: #3 Finding Roots in Compounds

Name_____ **Grade**_____

Teacher_____ **School**_____

Test #3

FINDING ROOTS IN COMPOUNDS

Directions

In this test, you are to find the two root words in compound words. Look at the example below and listen carefully to the directions.

Example

Group A

---

1. play/house

2. doghouse

3. playpen

DO NOT TURN THE PAGE UNTIL TOLD TO DO SO.

Group 1

1. grandfather
2. bedroom
3. storybook
4. someone

Group 2

1. doorway
2. henhouse
3. cupcake
4. without

Group 3

1. bowstring
2. deerskin
3. halfway
4. sawmill

Group 4

1. mankind
2. offshore
3. grapevine
4. rainbow

Group 5

1. flagship
2. pikeman
3. wheelwright
4. gentleman

Group 6

1. hornbill
2. outrigger
3. lockjaw
4. gangway

Content Description: Test #2 Meaning of Contractions

1. **Test Name:** 2.1 Meaning of Contractions

   Label for Skill: Translating contractions

   Definition of Skill: Translating contractions into component words

   Instructional Span: Introduced, 1, 2^1, 2^2; reviewed, subsequent reading instructional levels to 6

   Possible Score: 12

Name and Location of Elements Tested:

Element Tested	Location: Item #	R.I.L., Skill Introduced
One letter omitted: is, not	1, 2, 9, 12	1
Two letters omitted: will, have	3, 6, 8, 11	2^1
More than two letters omitted: would[1]	4, 7	2^2
Internal spelling or pronunciation changed	5, 10	2^1

[1] For items 4 and 7, it was also necessary to accept had as a correct response.

Directions For Examiner

Test #2 Meaning of Contractions

Step 1

BEGIN NOTE TO TEACHER

(Distribute test booklets to pupils. Have them fill in the identifying information -- name, etc. -- on the cover sheet. When this is completed, start the tape recorder.)

END NOTE TO TEACHER

Step 2

In this test, you are to write the words which make contractions. Look at the example below and listen carefully to the directions.

Example

Contractions	Words
I'm	I am
let's	let us
they're	(they are)

Look at the first word on the left -- I'm. I'm is a contraction. What are the two words you use to make I'm? (Pause) I am. These two words, I am, have been written in the blank lines. The next contraction is let's. What two words do you use to make let's? (Pause) Let us. These two words are written on the lines by let's. Now, you try the next one -- they're. Write the two words that are used to make they're in the blank lines. (Pause) The words you should have written are they are.

BEGIN NOTE TO TEACHER

(Stop the tape recorder at this point. Then say:)

Don't look at the test items until you are told to do so.

(Now check to see if the pupils know what to do, how to mark the answers, etc. Then ask:)

Do you understand how you are to write your answers?

(Answer any questions the pupils ask about how their test answers are to be recorded, but avoid teaching the skill being measured by this test. When questions are answered, turn on the tape recorder to finish the instructions. You have a short pause of about 8-10 seconds on the tape.)

END NOTE TO TEACHER

Step 3

You have 2 minutes to complete the test.

There may be some of these that you do not know. Just do as many as you can and try to do your best; don't worry if you don't know them all.

Step 4

Now turn the page and begin to write the two words for each contraction on the page. Spell the words as best you can.

BEGIN NOTE TO TEACHER

(Stop the tape recorder at this point. You have 10 to 20 seconds space on the tape before the next set of directions begins.)

END NOTE TO TEACHER

Name_____ Grade_____

Teacher_____ School_____

Test #2

MEANING OF CONTRACTIONS

Directions

In this test, you are to write the words which make contractions. Look at the example below and listen carefully to the directions.

Example

Contractions	Words which make contractions
I'm	I am
let's	let us
they're	_____ _____

DO NOT TURN THE PAGE
UNTIL TOLD TO DO SO.

Contractions	Words which make contractions	
1. he's		
2. isn't		
3. she'll		
4. we'd		
5. don't		
6. it'll		
7. he'd		
8. we've		
9. didn't		
10. won't		
11. could've		
12. where's		

Content Description: Test #4 Finding Roots in Inflected and Derived Forms

Instructional Level of Root Words

Root words were selected from reading instructional levels prior to the level at which the particular element being tested was introduced.

1. Subtest Name: 4.1 Finding Roots in Inflected and Derived Forms: No Root Change

Label for Skill: Identifying roots, endings, and suffixes

Definition of Skill: Identifying roots, endings, and suffixes in words in which spelling changes do not occur

Instructional Span: Introduced, P; reviewed, reading instructional levels subsequent to the level at which they were introduced

Possible Score: 12

Name and Location of Elements Tested:

Element: Ending or Suffix	Location: Item #	R.I.L., Element Introduced
1. -ed	1, 6	P, 2
2. -ly	3, 10	2, 1
3. -less	17, 20	3
4. -ion	22, 33	4
5. -ize	32, 43	5
6. -ee[1]	29, 38	6

2. Subtest Name: 4.2 Finding Roots in Inflected and Derived Forms: Prefixes

Label for Skill: Identifying roots and prefixes

Definition of Skill: Identifying roots and prefixes in words in which spelling changes do not occur

Instructional Span: Introduced, 2[1]; reviewed, reading instructional levels subsequent to the level at which the prefix was introduced

Possible Score: 10

---

[1]An error was made on item 29, examinee: a spelling change was involved. This error was not discovered until data were analyzed.

Content Description (Continued)

Name and Location of Elements Tested:

Element: Ending or Suffix	Location: Item #	R.I.L., Element Introduced
1. un-	2, 5	2^2
2. re-	14, 19	2^2
3. over-	18, 28	3^2
4. sub-	31, 40	4
5. mis-	34, 39	5

3. Subtest Name: 4.3 Finding Roots in Inflected and Derived Forms: Root Changes

Label for Skill: Locating Roots by using root-change rules

Definition of Skill: Using rules for root changes to locate root words in inflected forms in which spelling changes occur

Instructional Span: Introduced, 2^1, 2^2, 3^1; reviewed, each subsequent reading instructional level to 6 with reviews at reading instructional levels 5 and 6 being optional

Possible Score: 14

Elements Tested:

Rule #	Rule	R.I.L., Rule Introduced
1	When a root word ends in a single consonant, the consonant may be doubled before adding -ed, -ing, or other endings or suffixes which begin with a vowel.	2^1
2	When a root word ends in -e, the -e may be dropped before adding -ing, -ed, -est, -er, or other endings or suffixes which begin with a vowel.	2^1
3	When a root word ends in -y, the -y may be changed to -i before the ending or suffix is added. (This principle may be taught with the added point that the -y is usually changed to -i when the -y is immediately preceded by a consonant.)	2^1

(Content Description (Continued)

Rule #	Rule	R.I.L., Rule Introduced
4	When a root word ends in -y, the -y may be changed to -i before the suffix -ly is added.	2^2
5	When a root word ends in -f (or -fe in which the -e is silent), the -f may be changed to -v before the ending is added.	3^1
6	In adding the numerical suffix -ty to a root word, the root word may be changed before the suffix is added.	3^1
7	In adding the noun-forming suffix -th to a root word, the root word may be changed before the suffix is added.	3^1

Location of Elements Tested:

Rule #	Item #	Rule #	Item #
1	4, 9	5	15, 23
2	8, 11	6	21, 36
3	7, 12	7	27, 42
4	16, 25		

4. Subtest Name: 4.4 Finding Roots in Inflected and Derived Forms: More Than One Affix

Label for Skill: Identifying roots and multiple affixes

Definition of Skill: Identifying roots and affixes in words with more than one affix, with some words involving spelling changes

Instructional Span: Introduced, 2^1; reviewed, each subsequent reading instructional level to 6

Possible Score: 8

Content Description (Continued)

Name and Location of Elements Tested:

Element: Multiple Affixes	Location: Item #	R.I.L., Respective Elements Introduced
re- and -ed	24, 35	3^2, P
-ful and -ly	13, 30	2^2, 2^2
-less and -ness	26, 41	3^1, 3^1
un- and -ly (-y to -i before -ly)	37, 44	2^1, 2^2

Directions For Examiner

Test #4 Finding Roots in Inflected and Derived Forms

Step 1

BEGIN NOTE TO TEACHER

(Distribute test booklets to pupils. Have them fill in the identifying information -- name, etc. -- on the cover sheet. When this is completed, start the tape recorder.)

END NOTE TO TEACHER

Step 2

In this test, you will work with words which have been made by adding prefixes, suffixes, and endings to root words. You are to write the root from which each word was made. Look at the example below and listen carefully to the directions.

Example

Word	Root
comes	come
jumping	(jump)
dogs	(dog)

Look at the column of words on the left. The first word is comes. We want to write the root or word from which the word comes was made. This word ends in s. What is the root? (Pause) Come. Come is the root word for comes. It is written on the first blank line on your paper. Look at the second word -- jumping. What root word should you write? (Pause) Jump. Write jump on the next blank line. Now, let's do the third word. What is that word? That word is dogs. What is the root? It is dog. Now you should write dog on the next blank line. Write dog on the next blank line if you have not already done so.

BEGIN NOTE TO TEACHER

(Stop the tape recorder at this point. Then say:)

Don't look at the test items until you are told to do so.

(Now check to see if the pupils know what to do, how to mark the answers, etc. Then ask:)

Do you understand how you are to write your answers?

(Answer any questions the pupils ask about how their test answers are to be recorded, but avoid teaching the skill being measured by this test. When questions are answered, turn on the tape recorder to finish the instructions. You have a short pause of about 8-10 seconds on the tape.)

END NOTE TO TEACHER

Step 3

You have 6 minutes to complete the test.

There may be some of these that you do not know. Just do as many as you can and try to do your best; don't worry if you don't know them all.

Step 4

When you finish the first page, go on to the next page. Now turn the page and begin to write the root words.

BEGIN NOTE TO TEACHER

(Stop the tape recorder at this point. You have 10 to 20 seconds space on the tape before the next set of directions begins.)

END NOTE TO TEACHER

Name_____ Grade_____

Teacher_____ School_____

Test #4

FINDING ROOTS IN INFLECTED AND DERIVED FORMS

Directions

In this test, you will work with words which have been formed by adding prefixes, suffixes, and endings. You are to write the root from which each word was made. Look at the example below and listen carefully to the directions.

Example

Word	Root
comes	come
jumping	
dogs	

DO NOT TURN THE PAGE UNTIL TOLD TO DO SO.

Word	Root
1. parked	
2. unpin	
3. darkly	
4. fattest	
5. unseen	
6. walked	
7. stories	
8. finest	
9. stopped	
10. slowly	
11. pictured	
12. families	
13. helpfully	
14. rename	
15. wolves	
16. merrily	
17. wordless	
18. overhear	
19. rewash	
20. bottomless	
21. fifty	
22. subjection	

GO ON TO THE NEXT PAGE

Word	Root
23. knives	
24. reworded	
25. angrily	
26. sleeplessness	
27. truth	
28. overpaid	
29. examinee	
30. cheerfully	
31. subdivide	
32. hospitalize	
33. invention	
34. misunderstand	
35. refloored	
36. forty	
37. unhappily	
38. grantee	
39. misplace	
40. subbasement	
41. restlessness	
42. width	
43. symbolize	
44. uneasily	

Content Description: Test #1 Adding Endings or Suffixes

Instructional Level of Root Words

Root words were selected from reading instructional levels prior to the level at which the particular element being tested was introduced.

1. **Subtest Name:** 1.1 Adding Endings or Suffixes: Root Changes

Label for Skill:	Changing roots by using root-change rules
Definition of Skill:	Applying rules for root changes to produce inflected and derived forms
Instructional Span:	Introduced, 2^1, 2^2, 3^1; reviewed, subsequent reading instructional levels to 6 with reviews at reading instructional levels 5 and 6 being optional
Possible Score[1]:	14

Elements Tested:

Rule #	Rule	R.I.L., Rule Introduced
1	When a root word ends in a single consonant, the consonant may be doubled before adding -ed, -ing, or other endings or suffixes which begin with a vowel.	2^2 2^1
2	When a root word ends in -e, the -e may be dropped before adding -ing, -ed, -est, -er, or other endings or suffixes which begin with a vowel.	2^1
3	When a root word ends in -y, the -y may be changed to -i before the ending or suffix is added. (This principle may be taught with the added point that the -y is usually changed to -i when the -y is immediately preceded by a consonant.)	2^1
4	When a root word ends in -y, the -y may be changed to -i before the suffix -ly is added.	2^2

[1] The test score does not include the subjects' responses to the foils.

Content Description (Continued)

Rule #	Rule	R.I.L, Rule Introduced
5	When a root word ends in -f (or -fe in which the -e is silent), the -f may be changed to -v before the ending is added.	3[1]
6	In adding the numerical suffix -ty to a root word, the root word may be changed before the suffix is added.	3[1]
7	In adding the noun-forming suffix -th to a root word, the root word may be changed before the suffix is added.	3[1]

Location of Elements:

Rule #	Elements: With Root Change	Foil Elements: No Root Change
1	7, 10	3, 12
2	2, 11	16, 5
3	1, 14	4, 8
4	9, 13	6, 15
5	17, 26	18, 23
6	21, 28	19[1], 24
7	22, 25	20, 27

[1] An error was made on item 19, eighty: a spelling change (numerical -ty) is involved. This error was not discovered until data were analyzed.

Directions For Examiner

Test #1 Adding Endings or Suffixes

Step 1

BEGIN NOTE TO TEACHER

(Distribute test booklets to pupils. Have them fill in the identifying information -- name, etc. -- on the cover sheet. When this is completed, start the tape recorder.)

END NOTE TO TEACHER

Step 2

In this test, you are to add an ending or suffix to a root word to make a new word form. Look at the example below and listen carefully to the directions.

Example

Root Word	Add this Ending or Suffix	New Word Form
jump	-ing	jumping
help	-s	helps
see	-ing	(seeing)

Look at the words in the left hand column; the first word is jump. We can make a new word with jump by adding an ending or suffix to it. The ending we want to add to jump is -ing. It is in the middle column. The new word we form by adding -ing to jump is jumping. It is written for you on the blank line in the last column. Now, look at the next word--help. What ending do we want to add? (Pause) When -s is added to help, what is the new word? (Pause) Helps. It also has been written on the blank line. Let's try adding an ending to the other word to be sure you understand what to do. What is the root word? It's see. What ending do we add? It's -ing.

You see -ing in the middle column. Then what word should you write in the last column? You should write seeing, s-e-e-i-n-g. If you have not written seeing in the last column, do so now.

BEGIN NOTE TO TEACHER

(Stop the tape recorder at this point. Then say:)

Don't look at the test items until you are told to do so.

(Now check to see if the pupils know what to do, how to mark the answers, etc. Then ask:)

Do you understand how you are to write your answers?

(Answer any questions the pupils ask about how their test answers are to be recorded, but avoid teaching the skill being measured by this test. When questions are answered, turn on the tape recorder to finish the instructions. You have a short pause of about 8-10 seconds on the tape.)

END NOTE TO TEACHER

Step 3

You have 5 minutes to complete the test.

There may be some of these that you do not know. Just do as many as you can and try to do your best; don't worry if you don't know them all.

Step 4

Now turn the page and begin to write the new word forms.

BEGIN NOTE TO TEACHER

(Stop the tape recorder at this point. You have 10 to 20 seconds space on the tape before the next set of directions begins.)

END NOTE TO TEACHER

Name _____ Grade _____

Teacher _____ School _____

Test #1

ADDING ENDINGS OR SUFFIXES

Directions

In this test, you are to add the ending or suffix to a root word to make a new word form. Look at the example below and listen carefully to the directions.

Example

Root Word	Add this Ending or Suffix	New Word Form
jump	-ing	jumping
help	-s	helps
see	-ing	

DO NOT TURN THE PAGE UNTIL TOLD TO DO SO.

Root Word	Add this Ending or Suffix	New Word Form
1. baby	-es	
2. late	-est	
3. rain	-ed	
4. watch	-es	
5. talk	-ed	
6. round	-ly	
7. pen	-ed	
8. catch	-es	
9. busy	-ly	
10. big	-est	
11. name	-ed	
12. dark	-est	
13. hungry	-ly	
14. penny	-es	
15. slow	-ly	
16. long	-est	
17. self	-es	
18. box	-es	
19. eight	-ty	
20. grow	-th	

GO ON TO THE NEXT PAGE

TESTS: #1 Adding Endings or Suffixes **A132**

Root Word	Add this Ending or Suffix	New Word Form
21. four	-ty	
22. true	-th	
23. buzz	-es	
24. six	-ty	
25. wide	-th	
26. life	-es	
27. warm	-th	
28. five	-ty	
	-ly	
	-ed	
	-ed	
	-ed	
	-ly	
	-ed	
	-ed	
	-ed	
	-ly	
	-ly	

APPENDIX F

SPECIMEN TESTS AND CONTENT DESCRIPTIONS:
DICTIONARY SKILLS

#5 Alphabetizing Words
#6 Dictionary Guide Words
#7 Finding Definitions
#8 Selecting Definitions
#9 Pronunciation Symbols

Content Description: Test #5 Alphabetizing Words

1. Subtest Name: 5.1 Alphabetizing Words: By First Letter

   Label for Skill: Identifying alphabetical sequences based on first letter

   Definition of Skill: Identifying alphabetical sequences among words; the ordering principle is based on the first letters of the words

   Instructional Span: Introduced, 2^2; reviewed, subsequent reading instructional levels to 6 with reviews at reading instructional levels 5 and 6 being optional

   Possible Score: 12

   Location of Element Tested: Group 1 and Group 2

2. Subtest Name: 5.2 Alphabetizing Words: By Third Letter

   Label for Skill: Identifying alphabetical sequences based on third letter

   Definition of Skill: Identifying alphabetical sequences among words; the ordering principle is based onthe third letters of the words

   Instructional Span: Introduced, 2^2; reviewed, each subsequent reading instructional level with reviews at reading instructional levels 5 and 6 being optional

   Possible Score: 12

   Location of Element Tested: Group 3 and Group 4

3. Subtest Name: 5.3 Alphabetizing Words: By First, Second, or Third Letter

   Label for Skill: Identifying alphabetical sequences based on first, second, or third letter

   Definition of Skill: Identifying alphabetical sequences among words; the ordering principle is based on the first letter, second letter, or third letter of the words

Content Description (Continued)

Instructional Span: Introduced, 2^2; reviewed, each subsequent reading instructional level with reviews at reading instructional levels 5 and 6 being optional

Possible Score: 12

Location of Element Tested: Group 5 and Group 6

Directions for Examiner

Test #5 Alphabetizing Words

Step 1

BEGIN NOTE TO TEACHER

(Distribute test booklets to pupils. Have them fill in the identifying information -- name, etc. -- on the cover sheet. When this is completed, start the tape recorder.)

END NOTE TO TEACHER

Step 2

In this test, you are to put groups of words in alphabetical order. Look at the example below and listen carefully to the directions.

Example

Group A		Group B	
4	zoo	(3)	night
2	dark	(4)	yes
3	pretty	(2)	early
1	all	(1)	better

Look at the words in Group A. Each word in Group A has a number written by it. The words in this group have already been put in alphabetical order by using the numbers. The word which would come first in order is the word all, so the number 1 is written in the blank in front of the word all. The word dark would be next in order, so the number 2 is written in the blank. Look at the other words and see how each word has a number by it. Your job is to put groups of words like these in order by writing the number of the order by each word. Now, let's try putting the words in Group B in order to be sure you understand. Which word in Group B will come first? (Pause) better. What number will you write by the word better? (Pause) 1. What word will be second in order? (Pause)

early. This word will have a 2 written in the blank space. Now what is the third word in order? It is night. You should write a 3 in the blank space before night. Now what is the fourth word in order? It's yes. You should write 4 in the blank by the word yes.

BEGIN NOTE TO TEACHER

(Stop the tape recorder at this point. Then say:)

Don't look at the test items until you are told to do so.

(Now check to see if the pupils know what to do, how to mark the answers, etc. Then ask:)

Do you understand how you are to write your answers?

(Answer any questions the pupils ask about how their test answers are to be recorded, but avoid teaching the skill being measured by this test. When questions are answered, turn on the tape recorder to finish the instructions. You have a short pause of about 8-10 seconds on the tape.)

END NOTE TO TEACHER

Step 3

You have 4 minutes to complete the test.

There may be some of these that you do not know. Just do as many as you can and try to do your best; don't worry if you don't know them all.

Step 4

You will have six groups of words to put in order. When you finish with Group 1, go on to Group 2 and the other groups until you finish all six groups. You may turn the page now and begin.

BEGIN NOTE TO TEACHER

(Stop the tape recorder at this point. You have 10 to 20 seconds space on the tape before the next set of directions begins.)

END NOTE TO TEACHER

Name_____ Grade_____

Teacher_____ School_____

Test #5

ALPHABETIZING WORDS

Directions

In this test, you are to put groups of words in alphabetical order. Look at the example below and listen carefully to directions.

Example

Group A		Group B	
4	zoo	_____	night
2	dark	_____	yes
3	pretty	_____	early
1	all	_____	better

DO NOT TURN THE PAGE
UNTIL TOLD TO DO SO.

Group 1

_____ today
_____ helpful
_____ bear
_____ lunch
_____ yard
_____ ride

Group 2

_____ jump
_____ clown
_____ scare
_____ glad
_____ never
_____ wash

Group 3

_____ near
_____ uncle
_____ next
_____ until
_____ need
_____ under

Group 4

_____ farm
_____ winter
_____ wise
_____ family
_____ with
_____ father

Group 5

_____ kind
_____ have
_____ visit
_____ hair
_____ very
_____ happy

Group 6

_____ yellow
_____ side
_____ leave
_____ sister
_____ large
_____ silly

Content Description: Test #6 Using Dictionary Guide Words

Reading Instructional Level of the Material

The reading instructional level at which this skill was introduced was the 3^1 level; therefore, the words used in the test were from reading instructional levels 3^1 through 6.

1. **Subtest Name:** 6.3 Dictionary Guide Words

   Label for Skill: Using dictionary guide words

   Definition of Skill: Knowing the function of and using dictionary guide words

   Instructional Span: Introduced, 3^1; reviewed, 3^2, 4, 5, 6

   Possible Score: 30

   Name and Location of Elements Tested:

Use Based on Third Letter:	Items 1, 5, 8, 10, 11, 13, 14, 16, 17, 23, 24, 29
Use Based on Fourth Letter:	Items 2, 3, 6, 9, 12, 18, 19, 20, 22, 25, 27, 28
Foils:	Items 4, 7, 15, 21, 26, 30

Directions For Examiner

Test #6 Using Dictionary Guide Words

Step 1

BEGIN NOTE TO TEACHER

(Distribute test booklets to pupils. Have them fill in the identifying information -- name, etc. -- on the cover sheet. When this is completed, start the tape recorder.)

END NOTE TO TEACHER

Step 2

In this test, you will be using dictionary guide words like those you use when you are finding words in a dictionary. For this test, you will not be given an example, so listen carefully to the directions. Now turn the page. (Pause)

Step 3

Look at the top of your paper. There are the dictionary guide words and the page numbers where they are found. Look at the bottom of your paper. There are the words you are to find the page numbers for. Your job is to use the dictionary guide words to help find the page number where each word is located. Draw a line under the correct page number -- either 174, 177, 206, or 210.

There are some words which you will not have page numbers for. The dictionary guide words will help you decide which words you do not have page numbers for. When you have a word which has no page number, mark the words in the last column, none of these pages.

BEGIN NOTE TO TEACHER

(Stop the tape recorder at this point. Then say:)

Don't start work on the test items until you are told to do so.

(Now check to see if the pupils know what to do, how to mark the answers, etc. Then ask:)

Do you understand how you are to write your answers?

(Answer any questions the pupils ask about how their test answers are to be recorded, but avoid teaching the skill being measured by this test. When questions are answered, turn on the tape recorder to finish the instructions. You have a short pause of about 8-10 seconds on the tape.)

END NOTE TO TEACHER

Step 4

You have 6 minutes to complete the test.

There may be some of these that you do not know. Just do as many as you can and try to do your best; don't worry if you don't know them all.

Step 5

Remember, draw a line under the correct page number or the words none of these pages. When you finish the first page, go on to the next page. Now you may begin.

BEGIN NOTE TO TEACHER

(Stop the tape recorder at this point. You have 10 to 20 seconds space on the tape before the next set of directions begins.)

END NOTE TO TEACHER

Name_____ Grade_____

Teacher_____ School_____

Test #6

USING DICTIONARY GUIDE WORDS

Directions

In this test, you will be using dictionary guide words like those you use when you are finding words in a dictionary. For this test you will not be given an example, so listen carefully to the directions.

DO NOT TURN THE PAGE UNTIL TOLD TO DO SO.

DICTIONARY GUIDE WORDS

clause	Page 174	clockwork
clown	Page 177	coddle
creamery	Page 206	crockery
cruelty	Page 210	cultivation

Words	Page Numbers in Dictionary				
1. cobbler	174	177	206	210	none of these pages
2. cloak	174	177	206	210	none of these pages
3. crumb	174	177	206	210	none of these pages
4. colt	174	177	206	210	none of these pages
5. clerk	174	177	206	210	none of these pages
6. croak	174	177	206	210	none of these pages
7. crude	174	177	206	210	none of these pages
8. cucumber	174	177	206	210	none of these pages
9. create	174	177	206	210	none of these pages
10. coasted	174	177	206	210	none of these pages
11. cuddle	174	177	206	210	none of these pages
12. credit	174	177	206	210	none of these pages
13. cleave	174	177	206	210	none of these pages

DICTIONARY GUIDE WORDS

clause	Page 174	clockwork
clown	Page 177	coddle
creamery	Page 206	crockery
cruelty	Page 210	cultivation

Words	Page Numbers in Dictionary				
14. cobra	174	177	206	210	none of these pages
15. clatter	174	177	206	210	none of these pages
16. crush	174	177	206	210	none of these pages
17. cocoa	174	177	206	210	none of these pages
18. client	174	177	206	210	none of these pages
19. crib	174	177	206	210	none of these pages
20. culprit	174	177	206	210	none of these pages
21. coil	174	177	206	210	none of these pages
22. criminal	174	177	206	210	none of these pages
23. cubic	174	177	206	210	none of these pages
24. cocoon	174	177	206	210	none of these pages
25. clause	174	177	206	210	none of these pages

DICTIONARY GUIDE WORDS

clause	Page 174	clockwork
clown	Page 177	coddle
creamery	Page 206	crockery
cruelty	Page 210	cultivation

Words		Page Numbers in Dictionary				
26.	curious	174	177	206	210	none of these pages
27.	critical	174	177	206	210	none of these pages
28.	cleft	174	177	206	210	none of these pages
29.	coach	174	177	206	210	none of these pages
30.	clothe	174	177	206	210	none of these pages

[1] This Glossary was used with Test #7, Finding Definitions and Test #8, Selecting Definitions.

GLOSSARY

ANCHOR Page 1 EFFECT

ANCHOR 1. a shaped piece of iron fastened to a ship by a long chain or rope and dropped to the bottom of the water. The anchor grips the earth or rocks and so keeps the ship from drifting. 2. hold in place with an anchor: Can you anchor the ship? 3. drop anchor: The ship anchored in the bay.

ARC 1. any part of a circle. 2. part of a curved line. n.

BUSH 1. a woody plant smaller than a tree, often with many separate branches starting from or near the ground. 2. spread out like a bush; grown thickly. 3. open forest; wild land. 1, 3n., 2v.

BUSINESS 1. thing one is busy at; work; occupation: A carpenter's business is building. 2. matter; affair: Mind your own business. 3. trade; buying and selling: The store does a big business.

CAST 1. throw: cast a fishing line, cast a shadow. 2. shape by pouring or squeezing into a mold to harden. Metal is first melted and then cast. 3. CAST ONE'S LOT WITH often means share the fate or fortune of. CAST, CASTING.

COLUMN 1. a slender, upright structure; a pillar. 2. anything that seems slender and upright like a column: a column of smoke.

COMMON 1. belonging to or shared by all: The land is the common property of five men. 2. often met with; usual; familiar: Snow is common in cold countries. 3. IN COMMON means owned, used, done by both or all: We have many interests in common.

CONTENT[1] 1. what is contained in anything; all things inside: the contents of a room, the contents of a container or holder of any kind. 2. what is written in a book; what is said in a speech: I agreed with the content of the speech.

CONTENT[2] 1. satisfy; please. 2. satisfied; contented: Are you content to wait until tomorrow? 3. contentment; satisfaction: The cat lay beside the fireplace in sleepy content.

CREST 1. decoration at the top of a coat of arms. 2. the top part; ridge; peak; summit. 3. reach the crest or top part of --. 1, 2n., 3v.

EFFECT 1. result: The effect of the gale was to overturn several boats. 2. get done; bring about: The war effected changes all over the world. 3. force; power; influence: The medicine had an immediate effect. 4. impression produced. 1, 3, 4n., 2v.

ELDER 1. older: my elder brother. 2. an older person: Children should respect their elders. 3. an officer in a church.

ENTRANCE[1] 1. act of entering. 2. freedom or right of entering. n.

ENTRANCE[2] fill with joy; delight; charm. v., EN TRANCED, EN TRANC ING.

FORGE[1] 1. place with fire where metal is heated very hot and then hammered into shape. 2. make; shape; form. 1n., 2v., FORGED, FORG ING.

FORGE[2] move forward slowly but steadily: One runner forged ahead of the others and won the race. v., FORGED, FORG ING.

GOV ERN rule; control; manage: John Carver was chosen to govern the Pilgrims for a year.

HUM MOCK 1. small rounded hill. 2. bump or ridge in a field of ice. n.

ILLUSION 1. appearance which is not real; misleading appearance. 2. a false idea, notion, or belief. n.

LAP[1] the front part from the waist to the knees of a person sitting down, with the clothing that covers it: She held the baby on her lap.

LAP[2] a part of something, such as a journey or a race.

LAP[3] drink by lifting up with the tongue; lick: Cats and dogs lap up water. LAPPED, LAP PING.

LASH[1] wave or beat back and forth: The lion lashed his tail. The wind lashes the sails. v.

LASH[2] tie or fasten with a rope, cord, etc.: The boys lashed logs together to make a raft.

LAUNCH 1. cause to slide into the water; set afloat. 2. push out or put forth on the water or into the air: launch a plane from an aircraft carrier. 3. start; set going; set out: His friends launched him in business. v.

LEDGE 1. narrow shelf: a window ledge. 2. a shelf or ridge of rock.

LOG 1. a length of wood just as it comes from the tree. 2. made of logs: a log house. 3. the daily record of a ship's voyage.

MEAL[1] 1. breakfast, lunch, dinner, or supper. 2. the food eaten or served at any one time: We enjoyed each meal at the hotel.

MEAL[2] 1. grain ground up: corn meal. 2. anything ground to a powder

MERE[1] nothing else than; only; simple. The cut was the merest scratch. adj., superl. MER EST.

MERE[2] Poetic. lake; pond. n.

MIRAGE 1. misleading appearance resulting from a reflection of some distant scene in such a way as to give the impression that it is near. 2. illusion; thing that does not exist. n.

MOUNT[1] 1. get up on: to mount a horse, to mount a platform. 2. get on a horse: Paul Revere mounted in haste. 3. put on a horse; furnish with a horse: the mounted police. 4. a horse for riding: The general had an excellent mount. 5. rise; increase; rise in amount: The cost of living mounts steadily. 6. put in proper position or order for use; fix in a proper setting: We mounted the pictures on cardboard.

MOUNT[2] a mountain; high hill. MOUNT is often used before the names of mountains: Mount Washington.

PORT[1] 1. place where ships and boats can be sheltered from storms; harbor. 2. place where ships and boats can load and unload; city or town with a harbor. n.

PORT[2] 1. opening in the side of a ship to let in light and air. 2. opening in a ship through which to shoot. n.

PORT[3] the left side of a ship, when facing the bow. n.

PRES ENT LY 1. before long; soon: The clock will strike presently. 2. at the present time; now: Most nine-year-old children are presently in fourth grade.

RAW 1. in the natural state; not treated or prepared; rough and unrestrained: raw strength. 2. not experienced; not trained: a raw soldier. adj.

REFUSE[1] 1. decline to accept, reject: refuse an offer. 2. deny (a request, demand, invitation); decline to give or grant: refuse admittance. 3. decline (to do something): refuse to discuss the question. 4. decline to accept or consent: She is free to refuse. v. REFUSED, REFUSING.

REFUSE[2] useless stuff; waste; rubbish: The street-cleaning department took away all refuse from the streets. n.

ROW[1] a line of people or things.

ROW[2] 1. use oars to move a boat: row to the shore. 2. move by oars: Row us to shore.

ROW[3] noisy quarrel; noise: The boys had a row over the bicycle.

SIGN 1. any mark or thing used to mean or point out something: See the sign over the door. 2. write one's name. 3. motion used to mean or point out something: A nod is a sign of agreement. 4. indication: There are no signs of life about the house.

SPELL[1] 1. write or say the letters of (a word) in order: We learn to spell in school. 2. mean: Those clouds spell a storm. SPELLED or SPELT, SPELL ING.

SPELL[2] 1. word or set of words supposed to have magic power. 2. fascination; charm: We were under the spell of the beautiful music.

STALK[1] the stem of a plant

STALK[2] walk with a slow, stiff, or haughty stride.

STAL WART 1. strongly built. 2. strong and brave: a stalwart soldier. 3. firm; steadfast. adj.

STERN[1] severe; strict; harsh.

STERN[2] the hind part of a ship or boat.

TELL TALE 1. thing that informs or warns. 2. revealing. 1n., 2adj.

VAULT[1] 1. an arched roof or ceiling; series of arches. 2. something like an arched roof. 3. make in the form of a vault. 4. an underground cellar or storehouse. 1, 2, 4n., 3v.

VAULT[2] jump or leap over by using a pole or the hands. v.

VENTURE Page 5 WITH DRAW

VEN TURE 1. a risky or daring undertaking: His courage was equal to any venture. 2. an entire voyage from home port to home port.

VIS TA 1. view seen through a narrow opening: The opening between the trees gave a vista of the lake. 2. mental view: Education opens up new vistas. n.

WAKE[1] 1. stop sleeping. 2. cause to stop sleeping. v., WAKED or WOKE, WAKED, WAK ING.

WAKE[2] 1. track left behind a moving ship. 2. track left behind any moving thing. n.

WA VER 1. move to and fro; flutter: a wavering voice. 2. flicker: a wavering light.

WIND[1] air in motion: The wind blew hard.

WIND[2] 1. move this way and that: A brook winds through the woods. 2. roll into a ball or on a spool or reel. 3. make something go by turning some part of it: to wind the clock. WOUND, WIND ING.

WITH DRAW 1. draw back; draw away: The child quickly withdrew his hand from the fire. 2. take back; remove. 3. go away: She withdrew from the room. WITH DREW, WITH DRAWN, WITH DRAWING.

Content Description: Test #7 Finding Definitions

Reading Instructional Level of the Material

The test material consisted of 16 words and 16 corresponding definitions. The words were selected from the basal readers at reading instructional levels 3[1] through 6. The definitions for these words were obtained from the Thorndike-Barnhart Beginning Dictionary.

1. **Subtest Name:** 7.1 Finding Definitions: Single Entry Words

   Label for Skill: Finding definitions of single entry words

   Definition of Skill: Using a glossary for locating definitions of single entry words with multiple meanings

   Instructional Span: Introduced, 3^1; reviewed, 3^2, 5, 6

   Possible Score: 12 (Both entry number and meaning number were included in the score.)

   Location[1] of Elements Tested: Items 2, 3, 5, 7, 13, 16

2. **Subtest Name:** 7.2 Finding Definitions: Multiple Entry Words

   Label for Skill: Finding definitions of multiple entry words

   Definition of Skill: Using a glossary for locating definitions of multiple entry words with multiple meanings

   Instructional Span: Introduced, 3^1; reviewed, 3^2, 5, 6

   Possible Score: 16 (Both entry number and meaning number were included in the score.)

   Location of Elements Tested: Items 1, 4, 6, 8, 9, 10, 14, 15

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[1]Items 11 and 12 were not included in the score. Item 11 was multiple entry and item 12 was single entry; therefore, they were eliminated since they were not comparable.

Directions For Examiner

Test #7 Finding Definitions

Step 1

BEGIN NOTE TO TEACHER

(Distribute test materials to pupils. Have them fill in the identifying information -- name, etc. -- on the cover sheet of test booklet. When this is completed, start the tape recorder.)

END NOTE TO TEACHER

Step 2

In this test, you are to find definitions of words. To do this, you have been given a glossary to use. Listen carefully to the directions. Now turn to the next page. Arrange your paper and your glossary on your desk so you can work with both of them. (Pause) The glossary has been arranged in the same way as your dictionary or the glossary in the back of your reading book, and you will use this glossary in the same way.

Step 3

Now look at the list of words on your paper -- log, row, etc. You have been given one meaning or definition for each of these words. Your job is to use your glossary to find each word and the definition you are given here. When you find the word and the definition, write the meaning number and entry number on your paper. You will fill in both blanks for each word. The first number you write will be the entry number. The second number you will write will be the meaning number. Do not leave a line blank.

BEGIN NOTE TO TEACHER

(Stop the tape recorder at this point. Then say:)

Don't look at the test items until you are told to do so.

(Now check to see if the pupils know what to do, how to mark the answers, etc. Then ask:)

Do you understand how you are to write your answers?

(Answer any questions the pupils ask about how their test answers are to be recorded, but avoid teaching the skill being measured by this test. When questions are answered, turn on the tape recorder to finish the instructions. You have a short pause of about 8-10 seconds on the tape.)

END NOTE TO TEACHER

Step 4

You have 7 minutes to complete the test.

There may be some of these that you do not know. So just do as many as you can and try to do your best; don't worry if you don't know them all.

Step 5

Remember that some words will have more than one entry and more than one meaning while some words will have only one meaning or one entry. Do not leave a space blank. Now you may begin.

BEGIN NOTE TO TEACHER

(Stop the tape recorder at this point. You have 10 to 20 seconds space on the tape before the next set of directions begins.)

END NOTE TO TEACHER

Name_____ Grade_____

Teacher_____ School_____

Test #7

FINDING DEFINITIONS

Directions

In this test, you are to find definitions of words. To do this, you will be given a glossary to use. Listen carefully to the directions.

DO NOT TURN THE PAGE UNTIL TOLD TO DO SO.

	Word	Meaning	Entry Number	Meaning Number
1.	spell	write or say the letters of a word in order	____	____
2.	business	matter; affair	____	____
3.	log	made of logs	____	____
4.	row	noisy quarrel; noise	____	____
5.	elder	an officer in a church	____	____
6.	mount	get up on	____	____
7.	cast	throw	____	____
8.	stern	the hind part of a boat or ship	____	____
9.	entrance	fill with joy; delight; charm	____	____
10.	wake	track left behind by any moving thing	____	____
11.	port	opening in a ship through which to shoot	____	____
12.	bush	open forest; wild land	____	____
13.	mirage	illusion; thing that does not exist	____	____
14.	forge	make; shape; form	____	____
15.	vault	an underground cellar or store house	____	____
16.	stalwart	firm; steadfast	____	____

Content Description: Test #8 Selecting Definitions

Reading Instructional Level of the Material

The test material consisted of 16 words imbedded in sentences. The words were selected from the basal readers at reading instructional levels 3[1] through 6. The sentences were based on examples used in the Thorndike-Barnhart Beginning Dictionary.

1. Subtest Name: 8.1 Selecting Definitions: Single Entry Words

   Label for Skill: Selecting definitions of single entry words

   Definition of Skill: Selecting glossary definitions appropriate for substituting for words in the contexts of sentences, each word being a single entry with multiple meanings

   Instructional Span: Introduced, 3[2]; reviewed, 5, 6

   Possible Score: 16 (Both entry number and meaning number were included in the score.)

   Location of Elements Tested: Items 1, 4, 7, 8, 10, 11, 13, 14

2. Subtest Name: 8.2 Selecting Definitions: Multiple Entry Words

   Label for Skill: Selecting definitions of multiple entry words

   Definition of Skill: Selecting glossary definitions appropriate for substituting for words in the contexts of sentences, each word being a multiple entry with multiple meanings

   Instructional Span: Introduced, 3[2]; reviewed, 5, 6

   Possible Score: 12 (Both entry number and meaning number were included in the score.)

   Location[1] of Elements Tested: Items 2, 3, 5, 6, 15, 16

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[1]Items 9 and 12 were not included in the score. They should have been a pair of multiple entry words, but item 9 was single entry.

Directions For Examiner

Test #8 Selecting Definitions

Step 1

BEGIN NOTE TO TEACHER

(Distribute test materials to pupils. Have them fill in the identifying information -- name, etc. -- on the cover sheet of test booklet. When this is completed, start the tape recorder.)

END NOTE TO TEACHER

Step 2

In this test, you are to find correct definitions to use in sentences. To do this, you have been given a glossary to use. Listen carefully to the directions. Now turn to the next page. Arrange your paper and your glossary on your desk so you can work with both of them. (Pause) The glossary has been arranged in the same way as your dictionary or the glossary in the back of your reading book, and you will use this glossary in the same way.

Step 3

Now look at the underlined word in each sentence. Your job is to find that word in the glossary and to write the meaning number and the entry number of the definition which best fits the way the word has been used in the sentence. You will fill in both blanks for each word. The first number you will write will be the entry number. The second number you will write will be the meaning number. Do not leave a line blank.

BEGIN NOTE TO TEACHER

(Stop the tape recorder at this point: Then say:)

Don't look at the test items until you are told to do so.

(Now check to see if the pupils know what to do, how to mark the answers, etc. Then ask:)

Do you understand how you are to write your answers?

(Answer any questions the pupils ask about how their test answers are to be recorded, but avoid teaching the skill being measured by this test. When questions are answered, turn on the tape recorder to finish the instructions. You have a short pause of about 8-10 seconds on the tape.)

END NOTE TO TEACHER

Step 4

You have 7 minutes to complete the test.

There may be some of these that you do not know. Just do as many as you can and try to do your best; don't worry if you don't know them all.

Step 5

Remember that some words will have more than one entry and more than one meaning while some words will have only one meaning or one entry. Do not leave a space blank. Now you may begin.

BEGIN NOTE TO TEACHER

(Stop the tape recorder at this point. You have 10 to 20 seconds space on the tape before the next set of directions begins.)

END NOTE TO TEACHER

Name_____ Grade_____

Teacher_____ School_____

Test #8

SELECTING DEFINITIONS

Directions

In this test, you are to find correct definitions to use in sentences. To do this, you will be given a glossary to use.

Listen carefully to the directions.

DO NOT TURN THE PAGE UNTIL TOLD TO DO SO.

TESTS: #8 Selecting Definitions

Sentence	Entry Number	Meaning Number
1. The toys are <u>common</u> playthings.	___	___
2. She will <u>wind</u> the string.	___	___
3. He was <u>content</u> to wait for the postman.	___	___
4. Jim will <u>withdraw</u> his promise.	___	___
5. The <u>stalk</u> is cut too short.	___	___
6. Watch my pet <u>lap</u> his milk.	___	___
7. The flag will <u>waver</u> in the wind.	___	___
8. <u>Anchor</u> the paper so it will not blow away.	___	___
9. The cat was eating <u>raw</u> meat.	___	___
10. He will <u>launch</u> his plan soon.	___	___
11. The lights gave the <u>effect</u> of a rainbow.	___	___
12. He cleaned up the <u>refuse</u>.	___	___
13. He had the <u>illusion</u> that his money would last forever.	___	___
14. The <u>crest</u> of the mountain was covered with snow.	___	___
15. <u>Lash</u> the boat to the dock.	___	___
16. The <u>mere</u> was calm and blue.	___	___

Content Description: Test #9 Pronunciation Symbols

Reading Instructional Level of the Material

The skill of interpreting pronunciation symbols was introduced at 3^1 reading instructional level and reviewed at each subsequent reading instructional level to 6. The words in this test were taken from basal readers at these reading instructional levels.

1. Subtest Name:	9.1 Pronunciation Symbols: Single Symbols
Label for Skill:	Interpreting single pronunciation symbols
Definition of Skill:	Interpreting pronunciation symbols for vowel sounds in words in which only one symbol is used
Instructional Span:	Introduced, 3^1; reviewed, each subsequent reading instructional level to 6
Possible Score:	16

Location of Elements Tested: Items 1 through 16

2. Subtest Name:	9.2 Pronunciation Symbols: Multiple Symbols
Label for Skill:	Interpreting multiple pronunciation symbols
Definition of Skill:	Interpreting pronunciation symbols for vowel sounds in words in which three or four symbols are used
Instructional Span:	Introduced, 3^1; reviewed, each subsequent reading instructional level to 6
Possible Score:	8

Location of Elements Tested: Items 17 through 24

Directions For Examiner

Test #9 Pronunciation Symbols

Step 1

BEGIN NOTE TO TEACHER

(Distribute test materials to pupils. Have them fill in the identifying information -- name, etc. -- on the cover sheet of test booklet. When this is completed, start the tape recorder.)

END NOTE TO TEACHER

Step 2

In this test, you are to choose the correct way to pronounce a word. Look at the example below and listen carefully to the directions.

Example

Words	Ways to Pronounce		
1. ride	rĕd	rid	(rīd)
2. play	plā̃	(plā)	plä

You have been given a Pronunciation Key to use with this test. Arrange your papers so you can look at your test booklet and the Pronunciation Key. Look at the first word on your paper -- ride. You are to choose the correct pronunciation for the word ride. There are three ways given to you to choose from. Look at them under Ways to Pronounce. Which is the correct pronunciation of the word ride? (Pause) The one with the line drawn under it. The third one. If you do not know the correct pronunciation, you can use the Pronunciation Key to help you. Now, look at the second word. Which is the correct way to pronounce play? Draw a line under the correct one. Which one is correct? Plā. It is the second one. You should have drawn a line under the second one. It is pla -- and the a has a bar over it. Use the Pronunciation Key at any time you need it to help you.

BEGIN NOTE TO TEACHER

(Stop the tape recorder at this point. Then say:)

Don't look at the test items until you are told to do so.

(Now check to see if the pupils know what to do, how to mark the answers, etc. Then ask:)

Do you understand how you are to write your answers?

(Answer any questions the pupils ask about how their test answers are to be recorded, but avoid teaching the skill being measured by this test. When questions are answered, turn on the tape recorder to finish the instructions. You have a short pause of about 8-10 seconds on the tape.)

END NOTE TO TEACHER

Step 3

You have 4 minutes to complete the test.

There may be some of these that you do not know. Just do as many as you can and try to do your best; don't worry if you don't know them all.

Step 4

Remember to draw a line under the correct pronunciation, and to use your Pronunciation Key to help you if you need it. You may turn the page and begin.

BEGIN NOTE TO TEACHER

(Stop the tape recorder at this point. You have 10 to 20 seconds space on the tape before the next set of directions begins.)

END NOTE TO TEACHER

FULL PRONUNCIATION KEY

The pronunciation of each word is shown just after the word, in this way: ab bre vi ate (ə brē′ vē āt). The letters and signs used are pronounced as in the words below. The mark ′ is placed after a syllable with primary or heavy accent, as in the example above. The mark ′ after a syllable shows a secondary or lighter accent, as in ab bre vi a tion (ə brē′ ə vē ā′ shən).

a	hat, cap	j	jam, enjoy	ə, u	cup, butter
ā	age, face	k	kind, seek	u̇	full, put
ä	care, air	l	land, coal	ü	rule, move
ȧ	father, far	m	me, am	ū	use, music
		n	no, in		
b	bad, rob			v	very, save
ch	child, much	ng	long, bring	w	will, woman
d	did, red			y	young, yet
		o	hot, rock	z	zero, breeze
e	let, best	ō	open, go	zh	measure, seizure
ē	equal, be	ȯ	order, all	ə	represents:
ėr	term, learn	oi	oil, voice		a in about
f	fat, if	ou	house, out		e in taken
g	go, bag	p	paper, cup		i in April
h	he, how	r	run, try		o in lemon
i	it, pin	s	say, yes		u in circus
ī	ice, five	sh	she, rush	th	thin, both
		t	tell, it	TH	then, smooth

Name_____ Grade_____

Teacher_____ School_____

Test #9

PRONUNCIATION SYMBOLS

Directions

In this test, you are to choose the correct way to pronounce a word. Look at the example below and listen carefully to the directions.

Example

Words	Ways to Pronounce			
1. ride	rəd	rĭd	rīd
2. play	plā	plă	plä

DO NOT TURN THE PAGE UNTIL TOLD TO DO SO.

	Words	Ways to Pronounce		
1.	cabinet	kāb′ə nit	kəb′ə nit	kab′ə nit
2.	delegate	del′ə gāt	dēl′ə gāt	dėl′ə gāt
3.	nation	nä′ shən	nã′ shən	nā′ shən
4.	hydrogen	hi′drə jən	hī′drə jən	hə′drə jən
5.	marsh	märsh	marsh	mārsh
6.	despair	di spār′	di spãr′	di spär′
7.	eaten	ėt′n	et′n	ēt′n
8.	summer	sum′ər	sūm′ər	süm′ər
9.	current	ker′ənt	kėr′ənt	kėr′ənt
10.	quick	kwīk	kwik	kwək
11.	tropic	trop′ik	trōp′ik	trôp′ik
12.	shrewd	shrūd	shrud	shrüd
13.	totem	to′təm	tō′təm	tô′təm
14.	refuse	ri fuz′	ri füz′	ri fūz′
15.	reform	ri fôrm′	ri fōrm′	ri fərm′
16.	ambitious	am bish′ŭs	am bish′əs	am bish′ūs
17.	testimony	tes′ti mə nē	tes′tə mō nē	tes′tə mô ni
18.	naturalist	nach′ə rəl ist	nach′u ral ist	nach′ə ral əst
19.	intelligence	in tĕl′ə jens	ən tel′i jens	in tel′ə jəns
20.	indignity	in dig′ni ti	in dig′nə tē	in dīg′ni tə
21.	conformity	kən fôr′mə tē	kon for′mə tē	kən for′mi tē
22.	barbarian	bar bär′ē ən	bär bãr′ə in	bär bãr′ē ən
23.	geology	jē ol′ə jē	je ôl′ə jē	jē ôl′o jē
24.	predicament	prə dik′ə ment	pri dik′ə mənt	pri dik′i ment

APPENDIX L

SPECIMEN TESTS AND CONTENT DESCRIPTIONS: WORD FUNCTIONS SKILLS

#14 Word Groups Identification
#15 Word Groups Anticipation

Content Description: Test #14 Word Groups Identification

Reading Instructional Level of the Material and Format

The test material consisted of 24 sentences graduating from reading instructional level 1 through reading instructional level 6. Four sentences were chosen from each of the reading instructional levels with each sentence assessing two of the four word groups: nouns, verbs, adjectives, and adverbs.

Each sentence contained two underlined words or phrases; the subject had to specify the form class for each underlined word or phrase. In the alphanumeric designations of the items, the numbers refer to the sentence and the letters refer to the position in the sentence occupied by the element being tested. For example, 3B and 4A indicate positions of nouns; that is, in sentence 3, the second underlined element is a noun, while in sentence 4, the first underlined element is a noun.

1. **Subtest Name:** 14.1 Word Group Identification: Nouns

   Label for Skill: Recognizing functions of nouns

   Definition of Skill: Recognizing functions of words or phrases which serve as nouns in sentences

   Instructional Span: Introduced, Pp; reviewed, each subsequent reading instructional level to 6

   Possible Score: 12

   Location of Elements Tested: Items 3B, 4A, 5A, 8B, 11B, 12A, 13A, 16A, 19B, 20B, 21B, 24B

2. **Subtest Name:** 14.2 Word Group Identification: Verbs

   Label for Skill: Recognizing functions of verbs

   Definition of Skill: Recognizing functions of words or phrases which serve as verbs in sentences

   Instructional Span: Introduced, Pp; reviewed, each subsequent reading instructional level to 6

   Possible Score: 12

   Location of Elements Tested: Items 1A, 2B, 6B, 7A, 9A, 10A, 14B, 15A, 17B, 18A, 22B, 23A

Content Description (Continued)

3. Subtest Name: 14.3 Word Group Identification: Adjectives

Label for Skill: Recognizing functions of adjectives

Definition of Skill: Recognizing functions of words or phrases which serve as adjectives in sentences

Instructional Span: Introduced, Pp; reviewed, each subsequent reading instructional level to 6

Possible Score: 12

Location of Elements Tested: Items 1B, 4B, 7B, 8A, 9B, 12B, 15B, 16B, 17A, 20A, 23B, 24A

4. Subtest Name: 14.4 Word Group Identification: Adverbs

Label for Skill: Recognizing functions of adverbs

Definition of Skill: Recognizing functions of words or phrases which serve as adverbs in sentences

Instructional Span: Introduced, Pp; reviewed, each subsequent reading instructional level to 6

Possible Score: 12

Location of Elements Tested: Items 2A, 3A, 5B, 6A, 10B, 11A, 13B, 14A, 18B, 19A, 21A, 22A

Directions for Examiner

Test #14 Word Groups Identification

Step 1

BEGIN NOTE TO TEACHER

(Distribute test materials to pupils. Have them fill in the identifying information -- name, etc. -- on the cover sheet of the test booklets. When this is completed, start the tape recorder.)

END NOTE TO TEACHER

Step 2

In this test, some words in sentences are underlined. You are to read the sentences and figure out how the underlined words are used. Then, you are to write the number of the word groups which the underlined words belong to.

To help you do this, you use the paper you have been given, the List of Word Groups. You have worked with these word groups before. Arrange your test and your List on your desk so you can work with both of them. Look at the example below and listen carefully to the directions.

Example

---

1. The girl in the red dress runs after the pretty little puppy.
   a. (2) runs
   b. (3) little

2. After school Sally will be home to play with Billy.
   a. (4) after school
   b. (1) Billy

Look at the first sentence in the example. Two words are underlined: runs and little. See also these words are written below the sentence. Find the word, runs, in the sentence and see how it is used. Then, look at your List of Word Groups to see the number of the word group which it belongs to. Runs is a word for what people, animals, or things do so it belongs to Group 2, Words for what people, animals,

or things do, what they did, what they have done, or what they will do. And so, write a 2 in the blank in front of the word, runs, to show what groups of words it belongs to.

Now, find the word, little, in the sentence and see how it is used. Then, look at your List to find the right group number. Which group of words does it belong to? (Pause) Group 3, Words that help tell what kind, what color, how much, how many, or which one. And so, what do you write in the blank in front of the word, little? (Pause) You write a 3 in front of the word, little, to show the name of the group which it belongs to.

Now let's try example 2. "After school Sally will be home to play with Billy." After school and Billy are underlined. How is after school used in the sentence? It tells when, doesn't it? So what group of words does it belong to? Look at your List of Word Groups. It would belong to Group 4, wouldn't it? Write 4 in the blank in front of after school. Now, how is Billy used in the sentence? Find Billy in the sentence. The word Billy is the name of someone, isn't it? Then what group of words would it belong to? Look at your List of Word Groups. It would belong to Group 1, wouldn't it? Group 1 is for words for people, animals, things, or places. Write 1 in front of the word, Billy.

BEGIN NOTE TO TEACHER

(Stop the tape recorder at this point. Then say:)

Don't look at the test items until you are told to do so.

(Now check to see if the pupils know what to do, how to mark the answers, etc. Then ask:)

Do you understand how you are to write your answers?

(Answer any questions the pupils ask about how their test answers are to be recorded, but avoid teaching the skill being measured by this test. When questions are answered, turn on the tape recorder to finish the instructions. You have a short pause of about 8-10 seconds on the tape.)

END NOTE TO TEACHER

Step 3

You have 9 minutes to complete the test.

There may be some of these that you do not know. Just do as many as you can and try to do your best; don't worry if you don't know them all.

Step 4

Now turn the page and begin to find the numbers of the word groups which the underlined words belong to.

BEGIN NOTE TO TEACHER

(Stop the tape recorder at this point. You have 10 to 20 seconds space on the tape before the next set of directions begins.)

END NOTE TO TEACHER

LIST OF WORD GROUPS

Group 1: Words for people, animals, things, or places.

Group 2: Words for what people, animals, or things do, what they did, what they have done, or what they will do.

Group 3: Words that help tell what kind, what color, how much, how many, or which one.

Group 4: Words that help tell where, when, or how.

---

[1]This List of Word Groups was used with Test #14, Word Groups Identification and Test #15, Word Groups Anticipation.

Name _____ Grade _____

Teacher _____ School _____

Test #14

WORD GROUPS IDENTIFICATION

Directions

In this test, some words in sentences are underlined. You are to read the sentences and figure out how the underlined words are used. Then, you are to write the numbers of the word groups which the underlined words belong to. Look at the examples below and listen carefully to the directions.

Example

---

1. The girl in the red dress runs after the pretty little puppy.

   A. _____ runs

   B. _____ little

2. After school Sally will be home to play with Billy.

   A. _____ After school

   B. _____ Billy

DO NOT TURN THE PAGE
UNTIL TOLD TO DO SO.

1. Jane will ride the bigger horse after the two boys come back from a ride.

   A. _____ will ride

   B. _____ two

2. Soon the children found a good spot for a party.

   A. _____ Soon

   B. _____ found

3. Dick had to run fast to catch the little rabbit.

   A. _____ fast

   B. _____ rabbit

4. The happy clown and the pretty dog ran this way and that way.

   A. _____ clown

   B. _____ pretty

5. Before long, Susan came in and showed Dick the three books she had found outside.

   A. _____ books

   B. _____ outside

6. Just before bedtime Mother told Sam his brown puppy still was walking around the barnyard.

   A. _____ Just before bedtime

   B. _____ was walking

7. The last time grandmother stayed with Ann and Pete she made a very good cake.

   A. _____ stayed

   B. _____ very good

GO ON TO THE NEXT PAGE.

8. Just then George's <u>older</u> sister Penny came home from <u>school</u>.

   A. _____ older

   B. _____ school

9. When he got out of school, Tom almost <u>had decided</u> to give up being a trapper and become a <u>brave</u> hunter instead.

   A. _____ had decided

   B. _____ brave

10. The boys <u>heard</u> the tiny crack of small branches breaking under their feet and the swish of squirrels in the trees <u>overhead</u>.

   A. _____ heard

   B. _____ overhead

11. George began to think of summer and the fun he would have fishing <u>every day</u> with old <u>Bill</u>.

   A. _____ every day

   B. _____ Bill

12. Still whistling, Sam went on up the <u>street</u> until he came to the <u>small</u> shop, and then he stopped to look in.

   A. _____ street

   B. _____ small

13. The <u>baseball player</u> picked up his glove and sprinted <u>quickly</u> to the outfield.

   A. _____ baseball player

   B. _____ quickly

14. <u>Shortly</u>, the clown made a silly, disappointed face and <u>dropped</u> out of sight below the window.

   A. _____ Shortly

   B. _____ dropped

GO ON TO THE NEXT PAGE

15. Flourishing his long whip, the cowboy mounted his horse to go search for several cows which were lost.

A. _____ mounted

B. _____ several

16. When you put too many fish in a fish bowl or when you give the fish too much food, you soon get dirty water.

A. _____ fish bowl

B. _____ dirty

17. The indignant man fought hard when the soldiers accused him of signaling the enemy from the church.

A. _____ indignant

B. _____ accused

18. The pelicans would scoop up the minnows, toss back their heads, and let the river water drool out on both sides of their long beaks as they swallowed their catch.

A. _____ would scoop up

B. _____ out on both sides

19. For three hours, the crew carefully balanced the heaviness of the water outside the pressure chamber against the lightness of the air inside the bell.

A. _____ carefully

B. _____ chamber

20. After days of gratifying accomplishment, the spring thaw brought such danger to the naturalist that he decided to go home.

A. _____ gratifying

B. _____ naturalist

GO ON TO THE NEXT PAGE.

21. Now and forevermore, we do not need to fear that the new knowledge will cause others to have any disrespect for our customs and beliefs.

A. _____ Now and forevermore

B. _____ others

22. We all can learn intelligently from those who know more than we do, while we are keeping the best from our old way of life and adopting some of the new.

A. _____ intelligently

B. _____ are keeping

23. The cattle were poisoned by the thornlike shoot of the umtente grass; but when he took them to graze in fields of white clover, they got well.

A. _____ were poisoned

B. _____ thornlike

24. The continuing search for excellence does not necessarily lead the student to undue aggrandizement.

A. _____ continuing

B. _____ student

Content Description: Test #15 Word Groups Anticipation

Reading Instructional Level of the Material and Format

The test material consisted of 24 sentences graduating from reading instructional level 1 through reading instructional level 6. Four sentences were chosen from each of the reading instructional levels with each sentence assessing two of the four word groups: nouns, verbs, adjectives, and adverbs.

Each sentence included two blank lines indicating that words or phrases were deleted from the sentence; the subject had to specify the form class which had been deleted from the sentence. In the alphanumeric designations for location, the number indicates the sentence and the letter indicates the position in the sentence of the element tested. For example, 3A and 4B indicate positions of nouns; in sentence 3, the first blank space is where a noun is deleted, while in sentence 4, the second blank space is for a noun.

1. Subtest Name: 15.1 Word Group Anticipation: Nouns

   Label for Skill: Specifying functions of nouns

   Definition of Skill: Specifying that nouns are the form class which will function in given sentence contexts

   Instructional Span: Introduced, Pp; reviewed, each subsequent reading instructional level to 6

   Possible Score: 12

   Location of Elements Tested: Items 3A, 4B, 5B, 8A, 11B, 12A, 13A, 16A, 19B, 20B, 21A, 24B

2. Subtest Name: 15.2 Word Group Anticipation: Verbs

   Label for Skill: Specifying functions of verbs

   Definition of Skill: Specifying that verbs are the form class which will function in given sentence contexts

   Instructional Span: Introduced, Pp; reviewed, each subsequent reading instructional level to 6

   Possible Score: 12

   Location of Elements Tested: Items 1A, 2A, 6A, 7B, 9B, 10A, 14A, 15A, 17B, 18A, 22A, 23A

Content Description (Continued)

3. Subtest Name: 15.3 Word Group Anticipation: Adjectives

Label for Skill: Specifying functions of adjectives

Definition of Skill: Specifying that adjectives are the form class which will function in given sentence contexts

Instructional Span: Introduced, Pp; reviewed, each subsequent reading instructional level to 6

Possible Score: 12

Location of Elements Tested: Items 1B, 4A, 7A, 8B, 9A, 12B, 15B, 16B, 17A, 20A, 23B, 24A

4. Subtest Name: 15.4 Word Group Anticipation: Adverbs

Label for Skill: Specifying functions of adverbs

Definition of Skill: Specifying that adverbs are the form class which will function in given sentence contexts

Instructional Span: Introduced, Pp; reviewed, each subsequent reading instructional level to 6

Possible Score: 12

Location of Elements Tested: Items 2B, 3B, 5A, 6B, 10B, 11A, 13B, 14B, 18B, 19A, 21B, 22B

Directions for Examiner

Test #15 Word Groups Anticipation

Step 1

BEGIN NOTE TO TEACHER

(Distribute test materials to pupils. Have them fill in the identifying information -- name, etc. -- on the cover sheet of the test booklet. When this is completed, start the tape recorder.)

END NOTE TO TEACHER

Step 2

In this test, some words are left out of sentences. You are to read the sentences and figure out what kinds of words are left out. Then, you are to give the numbers of the word groups that the left-out words belong to.

To help you to do this, you use the paper you have been given, the List of Word Groups. You have worked with these word groups before. Arrange your test and your List on your desk so you can work with both of them. Look at the example below and listen carefully to the directions.

Example

A. ___(1)___ was hungry so he ___(2)___ all his food.

B. The black horse ran ___(4)___ across the ___(3)___ barnyard.

Look at the first sentence in the example. Words are left out in two places. One word or more than one word may be left out in each place. Read the whole sentence and look at the first blank space. The word or words which were left out must tell who or what was hungry. Look at your List of Word Groups. Words for people or animals are in Group 1. And so, a word from Group 1, Words for people, animals, things, or places, has been left out. Write a 1 in the blank to show which group of words the left-out word or words belong to.

Now find the second blank space. What kind of word must have been left out? (Pause) The word which was left out must tell what someone or something did. Look at your List to see the number of the group. What group of words tells these things? (Pause) Group 2, Words for what people or things do, what they did, what they have done, or what they will do. And so, what number do you write in the blank? (Pause) You write a 2 in the blank to show which group of words the left-out word or words belong to.

Let's now try Example B. "The black horse ran _____ across the _____ barnyard." What must the word or words left out in the first blank tell us? It would tell us how the black horse ran, wouldn't it? Look at your List of Word Groups. What group would this belong to? It would be Group 4, wouldn't it? Group 4 is Words that help tell where, when, or how. Write 4 in the first blank of example B if you have not already done so.

Now what is left out in the second blank? What will it tell us? It will tell us what kind or which one. Look at your List of Word Groups. What group would this belong to? Group 3 -- Words that help tell what kind, what color, how much, how many, or which one. You should write a 3 in the second blank. Do that now if you have not already done so.

BEGIN NOTE TO TEACHER

(Stop the tape recorder at this point. Then say:)

Don't look at the test items until you are told to do so.

(Now check to see if the pupils know what to do, how to mark the answers, etc. Then ask:)

Do you understand how you are to write your answers?

(Answer any questions the pupils ask about how their test answers are to be recorded, but avoid teaching the skill being measured by this test. When questions are answered, turn on the tape recorder to finish the instructions. You have a short pause of about 8-10 seconds on the tape.)

END NOTE TO TEACHER

Step 3

You have 9 minutes to complete the test.

There may be some of these that you do not know. Just do as many as you can and try to do your best; don't worry if you don't know them all.

Step 4

Now turn the page and begin to find the numbers of the word groups which the left-out words belong to.

BEGIN NOTE TO TEACHER

(Stop the tape recorder at this point. You have 10 to 20 seconds space on the tape before the next set of directions begins.)

END NOTE TO TEACHER

Name_____ Grade_____

Teacher_____ School_____

Test #15

WORD GROUPS ANTICIPATION

Directions

In this test, some words are left out of sentences. You are to read the sentences and figure out what kinds of words are left out. Then, you are to give the numbers of the word group that the left-out words belong to. Look at the examples below and listen carefully to the directions.

Example

A. _____ was hungry so he _____ all of his food.

B. The black horse ran _____ across the _____ barnyard.

DO NOT TURN THE PAGE UNTIL TOLD TO DO SO.

1. Just then Billy _____ off the bed and ran to his _____ chair.

2. Spot _____ at the pony to make him run _____.

3. Soon the _____ were ready to eat so they sat _____ and began.

4. Billy wants a _____ wagon and so do Dick and _____.

5. Jim's father _____ took some colored picture _____ out of a box.

6. Bob and John _____ home from school and then they hurried _____ to play.

7. Everyone in the _____ neighborhood knew that Mr. Banks _____ a new flag this year.

8. The _____ tried but they could not find a picture of a _____ fish.

9. The _____ room was so crowded Mrs. Weeks thought that she and Susan _____ a hard time getting in.

10. As the three young people _____ at them, the blue and white birds flew quickly upward and then dropped _____ into the trees.

11. If Billy worked _____ all morning, mother decided that she would make him something very good, like a _____.

12. The _____ stopped in the street was keeping the heavy traffic from moving and the _____ men from getting to work.

13. "Butterfly trees" are certain _____ on the California coast to which the Monarch butterflies return _____.

14. We all _____, without doubt, that the pleasant days of summer do not last _____.

15. Henry and his father _____ turns catching tiny fish with a net and moving them into a _____ jar.

GO ON TO THE NEXT PAGE

16. The old _____, delighted with company, balanced himself on his old chair, ready to go on with the _____ conversation.

17. Since old traditional names still are popular with _____ women in the United States today, you _____ many people with names like John and Mary.

18. Although the boy _____ to work hard at once, he had to wait until his muscles grew _____..

19. The boy _____ applied the match to the _____ so that his fire would be sure to start.

20. The West was a raw, elemental, and sometimes _____ land, but even in a crisis the _____ loved it.

21. The _____ needed rest but that was impossible so he set out _____ on the return journey.

22. The men _____ no conversation in the rowboat as it _____ slipped past the British man-of-war.

23. When the boys _____ to bed, the old lady sat down with her _____ workbasket and glanced at her husband.

24. Knowing how _____ the winter days were in the Far North, the _____ planned to stop at the small town only long enough to exchange the mail.

APPENDIX M

SPECIMEN TESTS AND CONTENT DESCRIPTIONS: COMPREHENSION SKILLS

#16 Sentence Meaning
#17 Paragraph Meaning
#19 Figurative Language

Content Description: Test #16 Sentence Meaning

Reading Instructional Level of the Material

The test material consisted of 24 sentences beginning at reading instructional level 1 and ending at reading instructional level 6. Four sentences were selected to represent each reading instructional level; two were used to represent direct statements and two involved implied statements.

1. **Subtest Name:** 16.1 Sentence Meaning: Direct Statement

   Label for Skill: Identifying cause-effect relationships directly stated in sentences

   Definition of Skill: Identifying directly stated cause-effect relationships presented through sentences

   Instructional Span: Introduced, Pp; reviewed, each subsequent reading instructional level to 6

   Possible Score: 12

   Location of Elements Tested: Items 2, 3, 6, 7, 10, 11, 14, 15, 18, 19, 22, 23

2. **Subtest Name:** 16.2 Sentence Meaning: Implied Meaning

   Label for Skill: Identifying cause-effect relationships implied in sentences

   Definition of Skill: Identifying implicitly stated cause-effect relationships presented through sentences

   Instructional Span: Introduced, Pp; reviewed, each subsequent reading instructional level to 6

   Possible Score: 12

   Location of Elements Tested: Items 1, 4, 5, 8, 9, 12, 13, 16, 17, 20, 21, 24

Directions For Examiner

Test #16 Sentence Meaning

Step 1

BEGIN NOTE TO TEACHER

(Distribute test booklets to pupils. Have them fill in the identifying information -- name, etc. -- on the cover sheet. When this is completed, start the tape recorder.)

END NOTE TO TEACHER

Step 2

In this test, you are to read sentences and answer questions about these sentences. Look at the example below and listen carefully to the directions.

Example

A. Patty will have a party for girls.
Who can come to the party?
_____ 1. Dick
_(X)_ 2. Sally
_____ 3. Tom

B. Mrs. Hen could not take a walk. She had to stay with her eggs.
What did Mrs. Hen do?
_____ 1. She took a walk
_____ 2. She ran
_(X)_ 3. She sat on her eggs

Look at the first part of the example. Example A. Read the first sentence silently while I read it aloud: "Patty will have a party for girls." Now look at the question: "Who can come to the party?" Look at the possible answers. The right answer is number 2, "Sally." So we put an X on the blank line by number 2, "Sally."

Look at the second part of the example, Example B. Read the sentence silently. (Pause) Now read the question and put an X on the blank line in front of the right answer to the question. (Pause) What is the right answer to the question: "What did Mrs. Hen do?" (Pause) That's right. The correct answer is number 3: "She sat on her eggs." Be sure you have an X on the blank line in front of number 3, "She sat on her eggs."

BEGIN NOTE TO TEACHER

(Stop the tape recorder at this point. Then say:)

Don't look at the test items until you are told to do so.

(Now check to see if the pupils know what to do, how to mark the answers, etc. Then ask:)

Do you understand how you are to write your answers?

(Answer any questions the pupils ask about how their test answers are to be recorded, but avoid teaching the skill being measured by this test. When questions are answered, turn on the tape recorder to finish the instructions. You have a short pause of about 8-10 seconds on the tape.)

END NOTE TO TEACHER

Step 3

You have 12 minutes to complete the test.

There may be some questions which you cannot answer. Just do as many as you can and do your best; don't worry if you don't know them all.

Step 4

When you finish a page go on quickly to the next page. Turn the page and begin.

BEGIN NOTE TO TEACHER

(Stop the tape recorder at this point. You have 10 to 20 seconds space on the tape before the next set of directions begins.)

END NOTE TO TEACHER

Name _____ Grade _____

Teacher _____ School _____

Test #16

SENTENCE MEANING

Directions

In this test you are to read sentences and then answer questions about the sentences. Listen carefully to the directions.

Example

A. Patty will have a party for girls.

Who can come to the party?

_____1. Dick

_____2. Sally

_____3. Tom

B. Mrs. Hen could not take a walk. She had to stay with her eggs.

What did Mrs. Hen do?

_____1. She took a walk.

_____2. She ran.

_____3. She sat on her eggs.

DO NOT TURN THE PAGE UNTIL TOLD TO DO SO

1. Dick likes to read books about farms.

   Which book will he like?

   _____a. A New Red Ball

   _____b. The Brave Lion

   _____c. Cows in the Corn

2. Sally walked in the rain to find Tim.

   Why did Sally get wet?

   _____a. Sally walked in the rain.

   _____b. Sally fell down.

   _____c. Sally played in the house.

3. It was cold, and Sally put on her coat.

   Why did Sally put on her coat?

   _____a. It was pretty.

   _____b. She was cold.

   _____c. It was hot.

4. Sally wanted to play with her doll, but she could not find it.

   How did Sally feel?

   _____a. She was sad.

   _____b. She laughed.

   _____c. She was happy.

5. Tom and Dick pushed hard on Jack's doorbell for three minutes, and no one came to the door.

   Why didn't Jack come to the door?

   _____a. Jack's mother came to the door.

   _____b. Jack's father came to the door.

   _____c. Jack was not at home.

GO ON TO THE NEXT PAGE

6. The boy yelled when an iron bar fell on his foot.

   Why did the boy yell?

   _____a. The iron bar rolled down the hill.

   _____b. The iron bar hit the boy on the foot.

   _____c. It was time to go home.

7. Aunt Jane put string around a big box so it wouldn't come open.

   Why did Aunt Jane put string around a big box?

   _____a. Aunt Jane was getting a box ready to mail away.

   _____b. Aunt Jane wanted the box to look pretty.

   _____c. Aunt Jane wanted to keep the box closed.

8. Three little kittens were hungry and they were looking for food.

   Why were the kittens hungry?

   _____a. They were full.

   _____b. They had not eaten.

   _____c. They were not happy.

9. The wind was very strong so Mrs. Giles ran to get her sheets off the clothesline.

   Why did Mrs. Giles run?

   _____a. She didn't want her sheets to blow down.

   _____b. She didn't want her sheets to get wet.

   _____c. She didn't want her sheets to fade.

GO ON TO THE NEXT PAGE

10. After chasing Pete for a long time, Jerry was out of breath and walked slowly toward the shade tree.

Why was Jerry out of breath?

_____a. Jerry wanted some water.

_____b. Jerry had been chasing Pete.

_____c. Jerry had been sick.

11. Mrs. West grabbed her little son by the hand and pulled him through the crowd to get a close look at the passing circus parade.

Why did Mrs. West pull her son through the crowd?

_____a. Mrs. West wanted her son to see the parade better.

_____b. The little boy was running away.

_____c. Mrs. West did not want to lose the little boy.

12. After a heavy rain, Tom Larsen put on his raincoat and boots and hurried down the dirt road to Grandfather's farm.

Why did Tom Larsen put on his raincoat and boots?

_____a. They were new.

_____b. He could not find his shoes and coat.

_____c. It was wet and muddy outside.

13. In many cities in Brazil, boys and girls spend only three hours a day in school, but they also study at home.

Why do boys and girls in Brazil study at home?

_____a. Pupils in Brazil do not have enough time to do all of their work at school.

_____b. Pupils in Brazil are not very smart.

_____c. Pupils in Brazil are smarter than pupils in the United States.

GO ON TO THE NEXT PAGE

14. On a weekend trip to Canada, Don asked for a quarter to buy a souvenir, and his father gave him two dimes and a nickle from a pocketful of change.

Why did Don want a quarter?

_____a. Don wanted to buy an ice cream soda.

_____b. Don wanted to buy something to remind him of the trip.

_____c. Don wanted to buy something to eat on his way home.

15. In order to learn the language commonly spoken in the United States, the pupils in a Mexican school learned about different kinds of sentences.

Why did the Mexican pupils learn about different kinds of sentences?

_____a. They wanted to learn Spanish.

_____b. They wanted to visit the United States.

_____c. They wanted to learn English.

16. As the flames leaped upward and came near the tenth floor window, one man sat on the floor and refused all assistance from the fireman.

Why did the man act as he did?

_____a. He wanted to get out by himself.

_____b. He was brave.

_____c. He was afraid.

17. As the sun sank behind the hills, the old farmer decided to plow one more row and then head for the barn.

Why did the farmer decide to go to the barn?

_____a. It was getting too dark to plow.

_____b. It was time to milk the cows.

_____c. It was time to go to bed.

GO ON TO THE NEXT PAGE

18. Geography and history have acted on the people in the Phillipine Islands in such a way that different people live in different ways.

Why do the people of the Phillipine Islands differ?

_____a. They differ because they all have common ancestors.

_____b. They differ because of where they live and events that occurred in the past.

_____c. They differ because they live in the same geographical surroundings and have a common history.

19. Hawaii, because of its unusual weather, raises many things, such as pineapples, sugar, and coffee.

Why is Hawaii able to raise many different things?

_____a. Hawaii's climate is favorable for farming.

_____b. Hawaii's weather is wet most of the year.

_____c. Hawaii is cold most of the year.

20. The pupil, that round dark spot in a person's eye, becomes larger as the room darkens, and when this occurs, the pupil is opening to permit more light to enter.

What will happen if you are in a dark room and someone suddenly turns on a light?

_____a. The pupil will stay the same size.

_____b. The pupil will get larger.

_____c. The pupil will get smaller.

GO ON TO THE NEXT PAGE

21. A huge truck, climbing slowly up the one-lane mountain road toward the pass, stalled near the top, and all automobiles behind it halted their progress toward the pass.

Why did all the cars stop?

_____a. The drivers of the cars wanted to help the truck driver.

_____b. The many cars coming down the mountain kept them from passing the stalled truck.

_____c. The stalled truck blocked the narrow road, thus making it impassable.

22. The complacent look on the artist's face indicated to the onlookers that he was ready to discontinue his work on the painting.

Why did the artist have a complacent look on his face?

_____a. He was unhappy with his painting.

_____b. He was pleased with his painting.

_____c. He felt defeated and wanted to give up working on the painting.

23. Knowing that an improper fit may mean blackout, the pilot rechecked his oxygen mask before he nosed the plane upward for the last leg of his attempt to reach 50,000 feet.

Why did the pilot recheck his oxygen mask?

_____a. He did not want the black marks, known as black-out spots, to form on his face as the result of too tight a mask.

_____b. He did not want to lose oxygen, which is necessary for remaining conscious, because of a loose mask.

_____c. He knew that oxygen, when combined with gases of the upper air, often explodes if allowed to flow too freely.

GO ON TO THE NEXT PAGE.

24. Those who lean toward the study of history likely count among their fellow Americans and friends such people as Benjamin Franklin, Paul Revere, and George Washington.

Why are these people thought of as friends by those who like to study history?

_____a. They are familiar with them because they have read about them so often.

_____b. They knew them personally because they lived at the same time.

_____c. They have common qualities that make them "brothers under the skin."

Content Description: Test #17 Paragraph Meaning

Reading Instructional Level of the Material

The Roman numeral preceding each story indicates the instructional level: i.e., I stands for reading instructional level 1; II stands for reading instructional level 2, etc. There are two stories at each instructional level.

1. Subtest Name: 17.1 Paragraph Meaning: Main Idea--Story

   Label for Skill: Identifying main ideas directly stated in stories

   Definition of Skill: Identifying main ideas which are directly stated in stories

   Instructional Span: Introduced, Pp; reviewed, each subsequent reading instructional level to 6

   Possible Score: 12

   Location of Elements Tested: Item 1 in the set of test items following each story.

2. Subtest Name: 17.2 Paragraph Meaning: Implied Idea--Story

   Label for Skill: Identifying main ideas implied in stories

   Definition of Skill: Identifying main ideas which are implied in stories

   Instructional Span: Introduced, Pp; reviewed, each subsequent reading instructional level to 6

   Possible Score: 12

   Location of Elements Tested: Item 2 in the set of test items following each story

3. Subtest Name: 17.3 Paragraph Meaning: Main Idea--Paragraph

   Label for Skill: Identifying main ideas directly stated in paragraphs

Content Description (Continued)

Definition of Skill: Identifying main ideas which are directly stated in paragraphs

Instructional Span: Introduced, Pp; reviewed, each subsequent reading instructional level to 6

Possible Score: 12

Location of Elements Tested: Item 3 in the set of test items following each story; exception, at reading instructional level 6 (VI) on pages 23-24, item 4 pertains to Score 17.3

4. Subtest Name: 17.4 Paragraph Meaning: Implied Ideas--Paragraph

Label for Skill: Identifying main ideas implied in paragraphs

Definition of Skill: Identifying main ideas which are implied in paragraphs

Instructional Span: Introduced, Pp; reviewed, each subsequent reading instructional level to 6

Possible Score: 12

Location of Elements Tested: Item 4 in the set of test items following each story; exception, at reading instructional level 6 (VI) on pages 23-24, item 3 pertains to Score 17.4

5. Subtest Name: 17.5 Paragraph Meaning: Details

Label for Skill: Identifying details in stories

Definition of Skill: Identifying specific, and smaller components of messages presented throughout stories

Instructional Span: Introduced, Pp; reviewed, each subsequent reading instructional level to 6

Possible Score: 24

Location of Elements Tested: Items 5 and 6 in the set of items following each story

Directions For Examiner

Test #17 Paragraph Meaning

Step 1

BEGIN NOTE TO TEACHER

(Distribute test booklets to pupils. Have them fill in the identifying information -- name, etc. -- on the cover sheet. When this is completed, start the tape recorder.)

END NOTE TO TEACHER

Step 2

In this test, you are to read some very short stories silently, and then you are to answer six questions about each story. Look at the example below and listen carefully to the directions.

Example

Billy was looking for his dog, Spot. He could not find him. Soon Spot started barking. Here was Spot in the barn! Spot had wanted to hide from Billy.

PUT AN X ON THE LINE IN FRONT OF THE RIGHT ANSWER

What was Billy looking for?

_____a. His cat

_____b. His pony

__X___c. His dog

_____d. His rabbit

Look at the little story about Billy. Now read this story to yourself. (Pause long enough for them to read the story.) Now look at the question about the story. What is the question? (Pause) You are to find the answer to the question, What was Billy looking for? You have four answers to choose from. Which is the right answer? (Pause) His dog is the right answer. An X is put on the line in front of it to show that it is the right answer. Each story that you read will have 6 questions to answer. Remember to put an X on the line in front of the right answer. There will be only one right answer for each question.

BEGIN NOTE TO TEACHER

(Stop the tape recorder at this point. Then say:)

Don't look at the test items until you are told to do so.

(Now check to see if the pupils know what to do, how to mark the answers, etc. Then ask:)

Do you understand how you are to write your answers?

(Answer any questions the pupils ask about how their test answers are to be recorded, but avoid teaching the skill being measured by this test. When questions are answered, turn on the tape recorder to finish the instructions. You have a short pause of about 8-10 seconds on the tape.)

END NOTE TO TEACHER

Step 3

You will have three minutes to read each story and answer the questions. When I tell you to begin you are to turn the page and start reading the story. When the teacher says "Stop," you must stop even if you have not answered all the questions. If you finish before the teacher says "Stop," look over your questions again if you need to. Do not turn the page to the next story until the teacher tells you to. Do as much as you can and try to do your best; don't worry if you don't know them all.

Step 4

Now turn the page and begin.

BEGIN NOTE TO TEACHER

(Stop the tape recorder at this point. You have 10 to 20 seconds space on the tape before the next set of directions begins.)

END NOTE TO TEACHER

Name_____ Grade_____

Teacher_____ School_____

Test #17

PARAGRAPH MEANING

Directions

In this test, you are to read some very short stories silently, and then you are to answer six questions about each story. Look at the example below and listen carefully to the directions.

Example

Billy was looking for his dog, Spot. He could not find him. Soon Spot started barking. Here was Spot in the barn! Spot had wanted to hide from Billy.

PUT AN X ON THE LINE IN FRONT OF THE RIGHT ANSWER

What was Billy looking for?

_____a. His cat

_____b. His pony

__X__c. His dog

_____d. His rabbit

DO NOT TURN THE PAGE
UNTIL TOLD TO DO SO

I

"Dick! Sally! Let's make a zoo!" said Billy.
"Let's make a zoo in the barnyard."

"What will we put in our zoo?" asked Dick.

"We will put our pets in the zoo," said Sally.
"They will be our animals."

The children ran to get the pets.
Sally took her puppy and Dick took his turtle
and his pony.
Billy put his pig in the zoo.
Soon all the pets were in the barnyard.

Then Billy said, "I will get my bird and put
it in the zoo, too."

Dick and Sally laughed. Dick said, "You can't
put your bird in the zoo, Billy."

"Why not?" said Billy.

"We think your bird will surprise you.
Just try it and see," said Dick.

PUT AN X ON THE LINE IN FRONT OF THE RIGHT ANSWER

1. Which is the best name for this story?

_____a. Billy's Surprise

_____b. Going to the Zoo

_____c. Making a Zoo

_____d. The Funny Bird

2. Why can't Billy put his bird in the zoo?

_____a. The turtle will eat it

_____b. The bird will fly away

_____c. The pony will take it to ride

_____d. The bird will eat the pig

GO ON TO THE NEXT PAGE

I (Continued)

3. What did they put in the zoo?

_____a. Plants

_____b. Food

_____c. Flowers

_____d. Pets

4. Why did the children make a zoo?

_____a. They wanted to make a zoo

_____b. Their mothers told them to make a zoo

_____c. They wanted to keep the animals from running away

_____d. They wanted to keep pet birds in it

5. Who said, "Let's make a zoo."?

_____a. Sally

_____b. Billy

_____c. Dick

_____d. Mother

6. What did Sally put in the zoo?

_____a. The pony

_____b. The turtle

_____c. The bird

_____d. The puppy

STOP
DO NOT TURN THE PAGE
UNTIL TOLD TO DO SO.

I

Five baby squirrels live outside my bedroom window. Their nest is high in a tree.

I watch one squirrel more than I do the others. He always seems bright and happy. I call him Peanuts. My name is Dick.

Peanuts was the first to climb out of the nest. First, he took a few steps along a branch. But he was afraid to turn around.

Then came Mother Squirrel. "I must teach you a few things," she seemed to say. Peanuts watched her run way out on the branch. She turned around and raced back.

Then Peanuts tried to turn around. He could do it too!

PUT AN X ON THE LINE IN FRONT OF THE RIGHT ANSWER

1. What is the best name for this story?

_____a. The Squirrels

_____b. Peanuts

_____c. Home of the Squirrels

_____d. Mother Squirrel

2. How does Dick feel when he watches Peanuts?

_____a. Sad

_____b. Sorry

_____c. Happy

_____d. Sick

GO ON TO THE NEXT PAGE

I (Continued)

3. Where do the baby squirrels live?

_____a. Outside Dick's kitchen window

_____b. Outside Dick's bedroom window

_____c. Outside Dick's playhouse

_____d. Outside Dick's tree house

4. Why was Peanuts afraid to turn around?

_____a. A cat might get him

_____b. A bird was behind him

_____c. Mother Squirrel did not want him to

_____d. He might fall

5. How many baby squirrels were in the nest?

_____a. Five

_____b. Two

_____c. Six

_____d. Three

6. Who showed Peanuts how to turn around?

_____a. Father Squirrel

_____b. A baby squirrel

_____c. Mother Squirrel

_____d. No one

STOP
DO NOT TURN THE PAGE
UNTIL TOLD TO DO SO

II

Every Saturday morning, there is a line of boys and girls on Garden Street. They are waiting to see a movie.

One Saturday morning there was a good cowboy movie. Pete came running down the street. Pete took one look at the long line of boys and girls. He was not going to go to the end of the line! No, sir. Pete walked up to the front of the line and pushed his way in there.

Pete had pushed his way right in front of Billy Wilson. Billy did not say a word. But he pulled off Pete's hat and handed it to the boy behind him.

"Pass it, Joe," said Billy.

Joe passed the hat to the girl behind him. And Pete's hat went down the line until it got to Betty at the very end.

Pete said to Billy, "Where's my hat?"

Billy pointed down the line. There at the end of the line was Betty holding up Pete's hat.

Everyone smiled. But not Pete. He did not say another word. He walked all the way back to Betty.

Pete still goes to the movies on Saturday mornings. But now he goes to the end of the line and waits his turn to buy his ticket.

PUT AN X ON THE LINE IN FRONT OF THE RIGHT ANSWER

1. What is the best title for this story?

_____a. Pete Learns a Lesson

_____b. Pete and his Friends

_____c. Waiting for a Movie

_____d. A Good Cowboy Movie

2. Why did the children pass Pete's hat?

_____a. They wanted to hide it

_____b. They wanted to play a trick on Pete

_____c. They wanted Pete to see the movie

_____d. They wanted Pete to wait his turn

GO ON TO THE NEXT PAGE

II (Continued)

3. What does Pete do now when he goes to the movie?

_____a. Goes to the front of the line

_____b. Pushes his way in

_____c. Goes to the end of the line

_____d. Buys his ticket on Friday

4. How did Pete feel when everyone smiled?

_____a. Happy

_____b. Foolish

_____c. Sad

_____d. Gay

5. Where did the boys and girls go on Saturday morning?

_____a. To school

_____b. To the movie

_____c. To the store

_____d. To the zoo

6. Who pulled off Pete's hat?

_____a. Billy

_____b. Pete

_____c. Joe

_____d. Betty

STOP
DO NOT TURN THE PAGE
UNTIL TOLD TO DO SO.

II

Jack was a little black dog. He was not a pretty dog but everyone liked him. Mr. Green, a friend of Jack's master, wanted a dog very much, so Jack was given to him. It was a winter day when Mr. Green took Jack away. He put Jack in a bag and laid the bag on the straw in the bottom of the sleigh between his feet. He wrapped a fur robe around himself and the bag. He drove for twenty-five miles with Jack covered up so that he could not see the road. When Mr. Green reached his home he took Jack carefully out of the sleigh. Jack slipped out of Mr. Green's arms and was off in a flash. Next morning Jack's old master heard a dog crying. He opened the door and there stood Jack. On the snow were bloody tracks where the hard crust had cut his feet. He jumped all over his master, who said, "I'll never let anybody take you away again."

PUT AN X ON THE LINE IN FRONT OF THE RIGHT ANSWER

1. Choose the best title for this story.

_____a. The Lost Dog

_____b. Little Black Dog

_____c. Dog Who Came Back

_____d. Bloody Paws

2. Why did Jack come home?

_____a. His old master called him

_____b. Mr. Green sent him

_____c. It was easy to come

_____d. He loved his old master better

GO ON TO THE NEXT PAGE

II (Continued)

3. What did Jack's master do when Jack came home?

_____a. He promised to keep him there

_____b. He scolded him

_____c. He sent him back to Mr. Green

_____d. He whipped him

4. How did Jack go to his old home?

_____a. With Mr. Green

_____b. All by himself

_____c. In the sleigh

_____d. With his old master

5. When did Jack reach his old master's house?

_____a. In a few hours

_____b. Two days later

_____c. The next night

_____d. The next morning

6. How many miles were driven by Mr. Green?

_____a. 1

_____b. 15

_____c. 25

_____d. 5

STOP
DO NOT TURN THE PAGE
UNTIL TOLD TO DO SO

III

Because he was a toad we called him Hoppy. His home was a hole beside our brook. By night he hunted insects. By day he slept in the hole. Always he hurried back to his hole before daylight.

One morning I covered his eyes with my hand, carried him across a vacant lot and placed him in a cool spot. Next morning he was back in his home beside our brook. Then I took him a half mile away. Two days later, he again found his way back. Next I put him in a box and carried him to another brook two miles away, where I set him free. Day after day we watched for Hoppy to return. But two miles seemed too much for Hoppy to hop.

Feeling somewhat guilty, I searched for him by the strange brook. I wanted to bring him home, but could not find him anywhere. Perhaps he had been killed by a passing car.

Two weeks later, I saw two eyes peering at me from a hole beside our brook. They were Hoppy's eyes. He was very thin, but he was home.

PUT AN X ON THE LINE IN FRONT OF THE RIGHT ANSWER

1. Choose the best title for this story.

_____ a. Hoppy's Half Mile

_____ b. Hoppy Leaves Home

_____ c. Hoppy Returns Home

_____ d. Hoppy's Eyes

2. How did the story teller feel about taking Hoppy away?

_____ a. Happy

_____ b. Mad

_____ c. Gay

_____ d. Sad

GO ON TO THE NEXT PAGE

III (Continued)

3. Where was the search made for Hoppy?

_____a. The brook

_____b. The woods

_____c. The backyard

_____d. The hole

4. Which place did Hoppy like best?

_____a. The vacant lot

_____b. The brook

_____c. The pond

_____d. The hole

5. What was Hoppy?

_____a. A tadpole

_____b. A toad

_____c. A grasshopper

_____d. A rabbit

6. How were Hoppy's eyes covered?

_____a. With a hand

_____b. With a finger

_____c. With a handkerchief

_____d. With a piece of cloth

STOP
DO NOT TURN THE PAGE
UNTIL TOLD TO DO SO.

III

Stop the music and the circus stops. The bandmaster really leads the show by playing music to fit each act. The men in the band know many tunes and can change quickly from one to another.

One day the ten tigers had just finished their act. They were leaving the ring to go back to their cages. Suddenly, the biggest cat jumped on another cat's back. The crowd screamed.

Other tigers snarled. The trainer cracked his whip just as another huge cat sprang. A free-for-all fight had begun. The trainer needed help to make his animals obey him.

At once the circus band started to play a loud marching song. The crowd had quieted down. The trainer and his helpers drove eight of the tigers out of the ring. With long poles they pushed the two fighting cats apart. At last, these too ran off to their cages.

In a flash, the band changed to the gay music of "Happy Days Are Here Again." Clowns bounded into the ring. The crowd clapped. Once more music had helped to save the day!

PUT AN X ON THE LINE IN FRONT OF THE RIGHT ANSWER

1. What is the main thing this story is about?

_____a. Trained circus animals

_____b. The tiger act

_____c. The tigers and the trainer

_____d. Circus music

2. Why did the band play when the tigers began to fight?

_____a. So the people would get quiet

_____b. So the trainer could get the tigers out

_____c. The tiger act was over

_____d. The tigers liked the music

GO ON TO THE NEXT PAGE

III (Continued)

3. How does the band lead the circus?

_____a. It marches first in the parade

_____b. It plays music to fit each act

_____c. It plays for every act

_____d. It is the first act you see at the circus

4. Why did the trainer need help with the fighting tigers?

_____a. He could not get them apart by himself

_____b. They were too big for him to lift

_____c. His whip was broken

_____d. The cages would not hold them

5. What was used to get the fighting tigers apart?

_____a. Long spears

_____b. Long ropes

_____c. Long whips

_____d. Long poles

6. What act came after the tiger act?

_____a. The elephants

_____b. The clowns

_____c. The jugglers

_____d. The wild horses

STOP
DO NOT TURN THE PAGE
UNTIL TOLD TO DO SO.

IV

An airplane pilot invited the skipper of a submarine to go up in a plane with him. The pilot frightened the skipper by power diving close to the earth, looping the loop, and barrel rolling.

When the pilot was the skipper's guest, the skipper ordered the crew to take the submarine out to sea and then down as far as it could go without being crushed. The skipper and pilot watched the depth gauge. The pilot grew more and more frightened as the gauge crept toward the danger mark. Finally the skipper ordered the crew to surface the submarine. But something went wrong. The submarine kept on going down. The frantic skipper gave frantic orders to his frantic crew. But still the needle on the gauge read deeper and deeper. Suddenly the hatch of the submarine was thrown open and the pilot discovered that the submarine had never left its pier.

PUT AN X ON THE LINE IN FRONT OF THE RIGHT ANSWER

1. What is this story about?

_____a. How two officers fought each other

_____b. How two officers became acquainted

_____c. How two officers played jokes on each other

_____d. How two officers angered each other

2. Which is the best way to describe what the skipper did to the pilot?

_____a. Clever clowning

_____b. Clever steering

_____c. Clever entertaining

_____d. Clever repayment

GO ON TO THE NEXT PAGE

IV (Continued)

3. What is the main idea in the last paragraph?

_____a. The skipper played a trick on the pilot

_____b. The pilot grew frightened

_____c. Something went wrong with the submarine

_____d. The submarine went out to sea

4. Why was the pilot able to do these stunts safely?

_____a. He was a bomber pilot

_____b. He was an expert pilot

_____c. He was an older man

_____d. He was an officer

5. What was one of the pilot's tricks?

_____a. Submarine steering

_____b. Racing

_____c. Barrel rolling

_____d. Shouting

6. How did the skipper feel while in the airplane?

_____a. He enjoyed himself

_____b. He felt safe

_____c. He was sick

_____d. He was frightened

STOP
DO NOT TURN THE PAGE
UNTIL TOLD TO DO SO.

IV

Before there were any watches or clocks, clever persons thought of ways of marking the passage of time. One way was for each person to watch the length of his shadow. When the sun rose in the morning, his shadow was quite long. Gradually his shadow grew shorter until noon. During the afternoon, his shadow began to grow longer and longer, and just at sunset it was the same length as at sunrise. Later, someone invented the sundial. The sundial had a metal finger which pointed straight up. When the sun shone, this finger made a shadow on the sundial. As the sun moved, the shadow moved. The sundial was so marked that the position of the shadow told the minutes and hours of the day.

Sundials were of no use on dark days. People wanted to know the time on dark days as well as on sunny days, so they had a timepiece which they called "the water thief." This "clock" is a deep bowl or jar with lines running around the inside to divide it into parts. Water drips through a tiny hole in the bottom of the bowl. As the water drips out drop by drop, the level or top of the water is lowered, thus showing the time on the lines. When the bowl is emptied, it must be filled again.

PUT AN X ON THE LINE IN FRONT OF THE RIGHT ANSWER

1. What is the best title for this selection?

_____a. Footprints on the Sands of Time

_____b. The Sundial

_____c. Man's Progress in Recording Time

_____d. The Water Clock

2. Why were timepieces invented?

_____a. People had money to buy them

_____b. People needed to tell time

_____c. People wanted to show they were clever

_____d. People liked to see the sun

GO ON TO THE NEXT PAGE

IV (Continued)

3. What is the main idea in the first paragraph?

_____a. The passage of time

_____b. How to measure time

_____c. The invention of the sundial

_____d. Using shadows to tell time

4. Before clocks were invented, what did man depend upon most to tell time?

_____a. His stomach

_____b. Sources of light

_____c. Tide changes

_____d. Water supply

5. When is the shadow shortest on the sundial?

_____a. At sunrise

_____b. At sunset

_____c. During the afternoon

_____d. At noon

6. When was "the water thief" needed to tell time?

_____a. On holidays

_____b. On all days

_____c. On dark days

_____d. On Sundays

STOP
DO NOT TURN THE PAGE
UNTIL TOLD TO DO SO.

V

A nobleman and a merchant once met in a tavern. For their lunch they both ordered soup. When it was brought, the nobleman took a spoonful, but the soup was so hot that he burned his mouth and tears came to his eyes. The merchant asked him why he was weeping. The nobleman was ashamed to admit that he had burned his mouth and answered, "Sir, I once had a brother who committed a great crime, for which he was hanged. I was thinking of his death, and that made me weep." The merchant believed this story and began to eat his soup. He too burned his mouth, so that he had tears in his eyes. The nobleman noticed it and asked the merchant, "Sir, why do you weep?" The merchant who now saw that the nobleman had deceived him, answered, "My Lord, I am weeping because you were not hanged together with your brother."

PUT AN X ON THE LINE IN FRONT OF THE RIGHT ANSWER

1. What does this story teach us?

_____a. Not to eat soup

_____b. Not to cry when we burn our mouths

_____c. Not to eat in taverns

_____d. Not to believe everything

2. Why did the merchant believe the nobleman?

_____a. All noblemen tell the truth

_____b. It was proper to do so

_____c. Merchants always believe everything

_____d. He was dull witted

3. Which word describes the conduct of the nobleman?

_____a. Noble

_____b. Correct

_____c. Unworthy

_____d. Polite

GO ON TO THE NEXT PAGE

V (Continued)

4. Which of these statements about the nobleman is most unlikely?

_____a. He had a brother who was hanged

_____b. He had a distinguished brother

_____c. He did not know the soup was too hot

_____d. He had eaten soup often

5. What did the merchant's answer show?

_____a. That he was sad

_____b. That he believed the nobleman

_____c. That he was angry with the nobleman

_____d. That he had a kind heart

6. Why didn't the nobleman tell the truth?

_____a. He was a nobleman

_____b. He felt ashamed

_____c. He was in a tavern

_____d. He was angry

STOP
DO NOT TURN THE PAGE
UNTIL TOLD TO DO SO.

V

The skyscraper, which is one of the greatest modern American creations, came into being as a result of necessity. The demand for room in an already congested district made it necessary, and modern engineering methods made it possible.

The steel-cage system of construction makes possible the superstructure. The cage is made of steel beams fastened together with bolts. It may be compared to a bridge set on end. The steel skeleton forms the whole support for the upper floors, and the walls are merely coverings for protection.

The construction of the substructure is just as marvelous. It must be so built that it will not only support the superstructure and its contents, but also bear the pressure exerted upon it by the force of the wind against the walls. In building the foundations, steel caissons - large boxlike structures - are sunk down to bedrock. When they reach bedrock, the rock is leveled and the caissons are filled with concrete; thus solid piers are made from bedrock to the surface of the ground.

PUT AN X ON THE LINE IN FRONT OF THE RIGHT ANSWER

1. What is the best title for this selection?

_____a. Modern Building Methods

_____b. Skyscrapers

_____c. An Engineer's Miracle

_____d. How to Build a Skyscraper

2. Why are skyscrapers necessary?

_____a. To provide growing populations with more housing

_____b. To provide a maximum of floor space which occupies a minimum of ground area

_____c. To build penthouses high in the sky

_____c. To provide observation posts and helicopter landing areas in large cities

GO ON TO THE NEXT PAGE

V (Continued)

3. What can you compare the steel cage to?

_____a. Any bridge

_____b. A concrete bridge

_____c. A railroad bridge

_____d. A bridge set on end

4. How is the actual construction of the substructure of a skyscraper made possible?

_____a. By means of deep excavations

_____b. By means of bedrock foundations

_____c. By means of steel cage systems

_____d. By means of concrete piers

5. What is the support of the upper floors of the superstructure directly dependent upon?

_____a. The walls

_____b. The steel skeleton

_____c. Concrete piers

_____d. Steel caissons

6. How are the steel beams fastened together?

_____a. Bolts

_____b. Welding

_____c. Soldering

_____d. Steel cables

STOP
DO NOT TURN THE PAGE
UNTIL TOLD TO DO SO.

VI

The discovery was entirely accidental. The two boys were searching for cattle that had strayed from the herd. The part of the plain over which they rode was separated from the inaccessible and apparently useless mesa by a turbulent stream. Jack had once seen a horse swim the river and disappear up the narrow box canyon of the mesa. Although the place had always been avoided by herders with cattle, the boys decided to cross and reconnoiter in search of the strays. They made their objective a high point which seemed to be the edge of the mesa. After an hour's climb they reached their lookout, and beheld in the cliffs above them a city, a sleeping city of stone! There, nestled in a great cavern, beautifully proportioned and symmetrically made, was a village of little tinted, flat-roofed houses. Mirage! was their first thought. Then they realized that they were looking at the ruins of an ancient, extinct civilization. Preserved in calm repose were the homes of some of the forebears of our early Americans.

PUT AN X ON THE LINE IN FRONT OF THE RIGHT ANSWER

1. Choose the best title for this selection.

_____a. The Mirage

_____b. The City

_____c. The Sleeping City

_____d. Discovery on the Mesa

2. Who might have been the first inhabitants of these dwellings?

_____a. American Indians

_____b. German-Americans

_____c. Irish-Americans

_____d. Cavemen

GO ON TO THE NEXT PAGE

VI (Continued)

3. Why was the discovery on the mesa not made before?

_____a. The mesa was uncultivated

_____b. The mesa was mountainous

_____c. The mesa was isolated

_____d. The mesa was uninhabited

4. To what might this discovery lead?

_____a. Pandemonium

_____b. Exploration

_____c. Conflagration

_____d. Catastrophe

5. What separated the mesa from the plain?

_____a. A trail

_____b. A cliff

_____c. A river

_____d. A road

6. In which state might this have happened?

_____a. Maine

_____b. Iowa

_____c. Virginia

_____d. New Mexico

STOP
DO NOT TURN THE PAGE
UNTIL TOLD TO DO SO.

VI

There are giant telescopes which look so far into the universe that it takes light two billion years to reach the telescope. These telescopes have revealed that stars do not exist by themselves. They are grouped into galaxies. Our sun, which is a very ordinary star, is part of a galaxy including about a billion stars. Both our sun and tiny earth are far out toward the edge of this galaxy. In the beginning, our sun was not even there, for scientists believe it is a billion years younger than the oldest star in our galaxy.

Some galaxies are spiral-shaped. The galaxy which includes the earth is one of these. It is a hundred times as wide as it is thick. We see the Milky Way when we look lengthwise through the stars in our galaxy. Some galaxies are elliptical. Some are shaped like a sphere. A few have irregular shapes. Most are either spiral or elliptical.

When men look as far as our biggest telescopes will reach, they do not see the edge of the universe. Galaxies, each with its own millions of stars, extend on and on. Recently it was discovered that radios with special antennas could pick up radio signals from galaxies far beyond the reach of telescopes.

Radio signals are very strong from a certain spot in the universe. When the world's largest telescope was turned on this spot, two galaxies were discovered colliding.

PUT AN X ON THE LINE IN FRONT OF THE RIGHT ANSWER

1. What is this story about?

_____a. Telescopes for viewing the stars

_____b. Galaxies of stars

_____c. Spiral-shaped galaxies

_____d. Sphere-shaped galaxies

GO ON TO THE NEXT PAGE

VI (Continued)

2. Why can't men see the edge of the universe?

_____a. Galaxies extend infinitely

_____b. Dense cloud formations obscure the view

_____c. Solar storms destroy signals

_____d. Gravitational force creates shifts in galaxy positions

3. What does the location of our sun tell us about it?

_____a. Our sun is not a star in our galaxy

_____b. Suns are not in galaxies

_____c. Our sun was not the first in our galaxy

_____d. Our sun is the only sun in our galaxy

4. What is the main idea in the second paragraph?

_____a. Galaxies are thick and wide

_____b. Galaxies are shaped alike

_____c. Galaxies look alike

_____d. Galaxies are shaped differently

5. What is the shape of most galaxies?

_____a. Spiral or spherical

_____b. Just spherical

_____c. Spiral or irregular

_____d. Spiral or ellipitical

6. What do we see when we look lengthwise through the stars in our galaxy?

_____a. The sun

_____b. The moon

_____c. The earth

_____d. The Milky Way

Content Description: Test #19 Figurative Language

Reading Instructional Level of the Material

The test material consisted of 40 sentences. Each sentence contained one instance of figurative language.

1. **Subtest Name:** 19.1 Figurative Language: Similes
   - **Label for Skill:** Interpreting similes
   - **Definition of Skill:** Interpreting similes used in sentence context
   - **Instructional Span:** Introduced, 2^1; reviewed, 6
   - **Possible Score:** 8
   - **Location of Elements Tested:** Items 1 through 8 in the set of test items

2. **Subtest Name:** 19.2 Figurative Language: Idioms
   - **Label for Skill:** Interpreting idioms
   - **Definition of Skill:** Interpreting idioms used in sentence context
   - **Instructional Span:** Introduced, 2^1; reviewed, 6
   - **Possible Score:** 8
   - **Location of Elements Tested:** Items 9 through 16 in the set of test items

3. **Subtest Name:** 19.3 Figurative Language: Exaggeration
   - **Label for Skill:** Interpreting hyperboles
   - **Definition of Skill:** Interpreting hyperboles in sentence context
   - **Instructional Span:** Introduced, 2^1; reviewed, 6
   - **Possible Score:** 8
   - **Location of Elements Tested:** Items 17 through 24 in the set of test items

Content Description (Continued)

4. Subtest Name: 19.4 Figurative Language: Personification

Label for Skill: Interpreting personification

Definition of Skill: Interpreting personification used in sentence context

Instructional Span: Introduced, 2^1; reviewed, 6

Possible Score: 8

Location of Elements Tested: Items 25 through 32 in the set of test items

5. Subtest Name: 19.5 Figurative Language: Metaphors

Label for Skill: Interpreting metaphors

Definition of Skill: Interpreting metaphors used in sentence context

Instructional Span: Introduced, 2^1; reviewed, 6

Possible Score: 8

Location of Elements Tested: Items 33 through 40 in the set of test items

Directions For Examiner

Test #19 Figurative Language Test

Step 1

BEGIN NOTE TO TEACHER

(Distribute test booklets to pupils. Have them fill in the identifying information -- name, etc. -- on the cover sheet. When this is completed, start the tape recorder.)

END NOTE TO TEACHER

Step 2

In this test, some words are underlined in each sentence. These words sometimes have special meanings. They are idioms, similes, metaphors, or examples of exaggeration or personification. You are to select the phrase below each sentence which tells in other words what the underlined words in the sentence at the top mean.

You do not have to know whether the underlined words are idioms, similes, metaphors, exaggeration, or personification. All you need to do is to choose the phrase that tells in other words what the underlined words in the sentence mean. Look at the example below and listen carefully to the directions.

Example

A. Roberta saw red when Billy broke her bike.

1. _____ saw everything turning red
2. __(X)__ got very mad

B. Ann was a picture of loveliness in her new dress.

1. __(X)__ was very pretty
2. _____ had her picture taken

BEGIN NOTE TO TEACHER

(Stop the tape recorder at this point. Then say:)

Don't look at the test items until you are told to do so.

(Now check to see if the pupils know what to do, how to mark the answers, etc. Then ask:)

Do you understand how you are to write your answers?

(Answer any questions the pupils ask about how their test answers are to be recorded, but avoid teaching the skill being measured by this test. When questions are answered, turn on the tape recorder to finish the instructions. You have a short pause of about 8-10 seconds on the tape.)

END NOTE TO TEACHER

Step 3

Look at the first example, Sentence A. I'll read Sentence A aloud. (Read the sentence aloud to the pupils.) Two words are underlined: saw red. This phrase is an idiom. Look at the two phrases under Sentence A. Which of these two phrases tells in other words what the underlined words mean. Put an X in the blank in front of the right meaning. (Pause) The second phrase is the right answer. When we say that Roberta saw red when Billy broke her bike, we mean in other words that Roberta got very mad when Billy broke her bike.

Now let's do the second example, Sentence B. (Read the sentence aloud to the pupils.) Three words are underlined: picture of loveliness. This phrase is a metaphor. Look at the two phrases under Sentence B. Put an X in the blank in front of the right meaning. (Pause) The first sentence is the right answer. When we say that Ann is a picture of loveliness in her new dress, we mean in other words that Ann was very pretty in the dress.

Step 4

The test will have forty (40) questions. You will have 12 minutes to work on it.

There will be some of these that you do not know. Don't worry if you don't know them all. Nobody will. Just do as many as you can and try to do your best. Remember, to get the right answer, you do not have to know whether the underlined words are an idiom, a metaphor,

a simile, exaggeration, or personification. All you have to do is choose the correct meaning.

Step 5

Now turn to the first page of the test. Once you start this test, keep working until you are through: go on from page to page whenever you are ready. Look at the underlined words in the sentence at the top of each question. Then put an X in front of the phrase below which tells in other words what the underlined words at the top mean. Ready. Begin.

BEGIN NOTE TO TEACHER

(Stop the tape recorder at this point. You have 10 to 20 seconds space on the tape before the next set of directions begins.)

END OF NOTE TO TEACHER

Name _____ Grade _____

Teacher _____ School _____

Test #19

FIGURATIVE LANGUAGE

Directions

In this test, some words are underlined in each sentence. These words sometimes have special meanings. They are idioms, similes, metaphors, or examples of exaggeration or personification. You are to select the phrase below each sentence which tells in other words what the underlined words in the sentence at the top mean.

You do not have to know whether the underlined words are idioms, similes, metaphors, exaggeration, or personification. All you need to do is to choose the phrase that tells in other words what the underlined words in the sentence mean.

Look at the example below and listen carefully to the directions.

GO ON TO THE NEXT PAGE

Example

A. Roberta saw red when Billy broke her bike.

1. _____ saw everything turning red.

2. _____ got very mad

B. Ann was a picture of loveliness in her new dress.

1. _____ was very pretty

2. _____ had her picture taken

DO NOT TURN THE PAGE UNTIL TOLD TO DO SO.

1. The growing boy eats like a horse.

   _____ eats corn and apples

   _____ eats very much

2. He was like a lion when his car wouldn't start.

   _____ loud and angry

   _____ making roaring noises

3. His hair looks like gold.

   _____ bright

   _____ yellow

4. A good dancer is like a snowflake.

   _____ very light

   _____ very small

5. I am happy as a lark.

   _____ very happy

   _____ happy as a bird

6. The colors in the picture were as bright as the sun.

   _____ too strong to look at long

   _____ very light and colorful

7. He moves like a turtle.

   _____ very slowly

   _____ very carefully

8. He walked to the door as quiet as a mouse.

   _____ with small steps

   _____ very quietly

GO ON TO THE NEXT PAGE.

9. "I got the new car for a song," Mr. Lee said happily.

_____ for writing a song

_____ for very little money

10. Timmy gets angry at the drop of a hat.

_____ for very little reason

_____ when his hat falls

11. "Hold your horses, Sam. The T.V. show will not be on until six o'clock," said Father.

_____ Keep the horses still

_____ Do not be in a hurry

12. Mary wanted to tell about her prize, but she did not want to toot her own horn.

_____ say good things about herself

_____ blow her new horn

13. Jane wants to save her money for a rainy day.

_____ until it rains

_____ until she needs it

14. Joe laughed at Bob. "Mr. Jones sure fixed your wagon for playing that trick."

_____ made your wagon ready to go

_____ made you sorry

15. Our boys took the lead in the ball game with Mr. Smith's boys.

_____ got in front

_____ got more points

GO ON TO THE NEXT PAGE.

16. Paul needed something to help break the ice when the party started.

_____ make smaller pieces of ice for drinks

_____ make everyone feel good and friendly

17. "Sam," said Mrs. Jones. "People in the next town can hear you talking."

_____ "You are talking by telephone to people in the next town."

_____ "You are talking very loudly."

18. Little Bill said, "I had to run two miles an hour to get to school."

_____ very fast

_____ two miles in one hour

19. His phone rings all day long.

_____ rings very often

_____ never stops ringing

20. My little brother is the best ballplayer around.

_____ plays better than everyone else

_____ plays very well

21. The second grade boy said, "A ten-ton truck won't hold all my school books."

_____ "I have more than a truck full of school books."

_____ "I own a lot of schoolbooks."

22. Bill would fall over a pin if it got in his way.

_____ easily

_____ over any very small thing

GO ON TO THE NEXT PAGE.

23. He ran faster than the wind.

_____ ahead of the wind

_____ very fast

24. It takes the bus a week to get around the block.

_____ a long time

_____ seven days

25. The winds roared angrily around the house.

_____ blew very hard

_____ made mad sounds

26. Winter's icy breath made everyone run fast.

_____ ice pack

_____ cold wind

27. The small river sang sweetly to the tired campers.

_____ was singing sweet songs

_____ was making sweet sounds

28. The boys saw the moon smiling.

_____ saw the moon when it was happy

_____ saw the moon when it was full

29. The wind whispered through the trees.

_____ made soft sounds

_____ said quiet words

30. The flowers danced in the wind.

_____ moved back and forth

_____ moved in time with music

GO ON TO THE NEXT PAGE.

31. The mountain and the sea greeted each other loudly.

_____ talked loudly when they met

_____ made loud noises when they met

32. The knife whistled through the air.

_____ went through the air fast

_____ made a song in the air

33. The clouds were a blanket over the city.

_____ kept the city warm

_____ covered the city

34. The lion is the king of the jungle.

_____ makes the other animals afraid

_____ makes the other animals obey

35. He was a mule when he was mad.

_____ gray and strong

_____ hard to move

36. Her hair is cotton candy.

_____ light and sticky

_____ soft and fluffy

37. Bill was a fox when he was in the woods.

_____ was full of tricks

_____ was hunting rabbits

38. The stars were pin holes in the sky.

_____ little dots

_____ little openings

GO ON TO THE NEXT PAGE.

39. His face was an open book.

_____ told a funny story

_____ told what he was thinking

40. Dick listened with the ears of an elephant.

_____ to hear everything

_____ to sounds in the forest

APPENDIX N

SPECIMEN TESTS AND CONTENT DESCRIPTIONS: PROCESSES TESTS

IP.1 Word Grouping Test
IP.2 Word Number Test
IP.3 Word Meaning Test
IP.4 Number Series Test

Content Description: IP.1, Word Grouping

1. **Test Name:** IP.1 Word Grouping Test

   Label for Skill: Conceptualization

   Definition of Skill: Ability to identify concepts, to group words on the bases of common attributes

   Possible Score: 25

Directions For Examiner

IP.1 Word Grouping Test

Step 1

BEGIN NOTE TO TEACHER

(Distribute test booklets to pupils. Have them fill in the identifying information -- name, etc. -- on the cover sheet. When this is completed, start the tape recorder.)

END NOTE TO TEACHER

Step 2

In this test, you will work with groups of words. Look at the example below and listen carefully to the directions.

Example

Row A:	**red**	**blue**	**(heavy)**	**green**
Row B:	**grape**	**(carrot)**	**apple**	**orange**

In the first row, three of the words are alike in some way and one is different. Look at each word as I read it aloud. Which word is different? The word heavy is different. Red, green, and blue are all names of colors but heavy is not a color. Draw a circle around the word that is different from the rest of the group, heavy. (Pause)

Look at the words in the second row as I read them aloud. Draw a circle around the word that is different. (Pause) Which word is different? The word carrot is different because the other words are all names of fruits but a carrot is not a fruit. You should have drawn a circle around the word, carrot.

BEGIN NOTE TO TEACHER

(Stop the tape recorder at this point. Then say:)

Don't look at the test items until you are told to do so.

(Now check to see if the pupils know what to do, how to mark the answers, etc. Then ask:)

Do you understand how you are to write your answers?

(Answer any questions the pupils ask about how their test answers are to be recorded. When questions are answered, turn on the tape recorder to finish the instructions. You have a short pause of about 8-10 seconds on the tape.)

END NOTE TO TEACHER

This test is made of several rows of words. I'll read the words to you. In each row, your job is to draw a circle around the word that is different from the rest of the group.

Work quickly. Do not worry if you can't find the right answer in every row. Probably no one can get them all right.

Step 3

Never turn a page until I tell you to do so. And, each time you do turn a page, turn it under your book. Only the page you are working on should show. Your teacher will show you how to do this. (Pause)

Step 4

Let's do the test. Turn the cover page and fold it under your test book.

Is everyone ready? Row 1: ....

BEGIN NOTE TO TEACHER

(Stop the tape recorder at this point. You have 10 to 20 seconds space on the tape before the next set of directions begins.)

END NOTE TO TEACHER

Name_____ Grade_____

Teacher_____ School_____

IP.1

WORD GROUPING TEST

Directions

In this test, you will work with groups of words. Look at the sample below and listen to the directions.

Example

Row A:	red	blue	heavy	green
Row B:	grape	carrot	apple	orange

DO NOT TURN THE PAGE
UNTIL TOLD TO DO SO.

1.	cow	dog	cat	hat
2.	trip	train	bus	car
3.	dollar	penny	dime	money
4.	run	walk	sit	skip
5.	mother	sister	uncle	brother
6.	lamp	lantern	candle	moon
7.	small	kind	good	happy
8.	chair	bed	table	floor
9.	night	week	morning	afternoon
10.	hear	sing	speak	whistle
11.	count	weight	measure	guess
12.	heart	ear	arm	nose
13.	lake	street	valley	river

14.	empty	box	hard	soft
15.	noise	sound	hear	eye
16.	crack	mend	break	rip
17.	throw	toss	catch	pitch
18.	spill	drip	leak	pour
19.	alone	only	both	single
20.	nails	hammer	rake	hoe
21.	puppy	hen	chick	kitten
22.	over	again	start	repeat
23.	find	hunt	look	seek
24.	paste	sew	cut	build
25.	pen	bow	arrow	pencil

Content Description: IP.2, Word Number

1. **Test Name:** IP.2 Word Number Test

   Label for Skill: Associative Memory

   Definition of Skill: Ability to form and remember arbitrary associations between sets of discrete stimuli and responses

   Possible Score: 20

Directions For Examiner

IP.2 Word Number Test

Step 1

BEGIN NOTE TO TEACHER

(Distribute test booklets to pupils. Have them fill in the identifying information -- name, etc. -- on the cover sheet. When this is completed, start the tape recorder.)

END NOTE TO TEACHER

Step 2

In this test, you will work with pairs of words and numbers. Look at the words and numbers below and listen to the directions.

Example

Example

STUDY LIST

	WORD	NUMBER
1.	chain	81
2.	carrot	72
3.	shoe	37
4.	garage	23
5.	map	49
6.	telephone	95
7.	baseball	16
8.	horse	64
9.	fireman	58
10.	airplane	53

Look at the STUDY LIST of word-number pairs. These are the words and numbers which go together to make a pair: chain goes with 81; carrot goes with 72; and so on.

Now look on the next page. (Pupil's test contains separate page.) This is a part of a TEST LIST. See the column of words. The numbers which go with the words to make word-number pairs are missing. Also, the word-number pairs are in mixed-up order.

Your job is to learn words and numbers which go together to make a pair. You do this by reading a STUDY LIST. Then, you will write the missing numbers in a TEST LIST to see how many word-number pairs you have learned.

Let's do the example. Turn back to page 1 and we'll read through the STUDY LIST together; ready: chain, 81; carrot, 72; shoe, 37; (reading continued to end of list.) Now, turn to page 2 and let's do the TEST LIST. After I read each word aloud, write the missing number.

1. garage (23)
2. baseball (16)
3. map (49)
4. carrot (72)

That's all of the TEST LIST we'll do for an example. When you begin the test, you'll have the whole list of pairs. Now, let's check what you have done: garage, 23; baseball, 16; map, 49; carrot, 72.

BEGIN NOTE TO TEACHER

(Stop the tape recorder at this point. Then say:)

Don't look at the test items until you are told to do so.

(Now check to see if the pupils know what to do, how to mark the answers, etc. Then ask:)

Do you understand how you are to write your answers?

(Answer any questions the pupils ask about how their test answers are to be recorded. When questions are answered, turn on the tape recorder to finish the instructions. You have a short pause of about 8-10 seconds on the tape.)

END NOTE TO TEACHER

When you begin the test, you will see a STUDY LIST first. We will read the STUDY LIST together two times. As each word-number pair is read aloud, you read it silently. Then, we will do the TEST LIST. On the TEST LIST, after each word is read aloud, you write the number which goes with the word to make a word-number pair.

One thing to remember. In the study lists and the test lists, the same words and numbers always go together to make a pair; but, the lists will be in mixed-up order each time. Do not try to learn just a list of numbers because you can't get the right answers that way. You have to learn which words and numbers go together to make a pair.

There are two parts to this test. Part I has a STUDY LIST and a TEST LIST. So does Part II. After we do Part I, we will rest; then we will do Part II. You probably cannot learn all of the word-number pairs. The list is too long for that in the time we have to study. But, learn as many word-number pairs as you can. Work carefully and as fast as you can.

Step 3

One more thing. Never turn a page until I tell you to do so. And, each time you turn a page, fold it under your book. Only the page you are working on should show. Never have the back of any page showing. Your teacher will show you how to do this. (Pause)

Step 4

Turn to the page that says STUDY LIST-1. Fold under your book the page that you wrote your name on, the sample TEST LIST, and the page that says Part I. Read silently with me while I read the word-number pairs aloud. We'll read the list two times. (STUDY LIST-1 read two times.)

Step 5

Turn to the next page, TEST LIST-1. Fold STUDY LIST-1 under your book. I'll read each word, you write the number which goes with it. Ready? (Read TEST LIST-1) garage _____; locket _____; etc. (After TEST LIST-1 is read, the pupils turn the page. They are allowed thirty seconds rest.)

Put down your pencils and turn the page in your book.

Step 6

(The procedures in Steps 4 and 5 are repeated for STUDY LIST-2 and TEST LIST-2, respectively.)

BEGIN NOTE TO TEACHER

(Stop the tape recorder at this point. You have 10 to 20 seconds space on the tape before the next set of directions begins.)

END NOTE TO TEACHER

Name _____ Grade _____

Teacher _____ School _____

IP.2

WORD NUMBER TEST

Directions

In this test, you will work with pairs of words and numbers. Look at the words and numbers below and listen carefully to the directions.

Example

STUDY LIST

	WORD	NUMBER		WORD	NUMBER
1.	chain	81	6.	telephone	95
2.	carrot	72	7.	baseball	16
3.	shoe	37	8.	horse	64
4.	garage	23	9.	fireman	58
5.	map	49	10.	airplane	53

TURN TO THE NEXT PAGE

TEST LIST

	WORD	NUMBER
1.	garage	_____
2.	baseball	_____
3.	map	_____
4.	carrot	_____

PART I

WORD NUMBER TEST

STUDY LIST - 1

	WORD	NUMBER
1.	map	49
2.	fireman	58
3.	carrot	72
4.	horse	64
5.	shoe	37
6.	chain	81
7.	telephone	95
8.	airplane	53
9.	baseball	16
10.	garage	23

WORD NUMBER TEST

TEST LIST - 1

	WORD	NUMBER
1.	garage	_____
2.	horse	_____
3.	airplane	_____
4.	map	_____
5.	carrot	_____
6.	baseball	_____
7.	telephone	_____
8.	fireman	_____
9.	shoe	_____
10.	chain	_____

PART II

WORD NUMBER TEST

STUDY LIST - 2

	WORD	NUMBER
1.	baseball	16
2.	airplane	53
3.	shoe	37
4.	map	49
5.	horse	64
6.	telephone	95
7.	chain	81
8.	garage	23
9.	carrot	72
10.	fireman	58

WORD NUMBER TEST

TEST LIST - 2

WORD	NUMBER
1. fireman	_____
2. carrot	_____
3. horse	_____
4. shoe	_____
5. chain	_____
6. baseball	_____
7. garage	_____
8. map	_____
9. airplane	_____
10. telephone	_____

Content Description: IP.3, Word Meaning

1. **Test Name:** IP.3 Word Meaning Test

   Label for Skill: Grasping Verbal Meaning

   Definition of Skill: Ability to understand ideas when they are expressed in words, that is, verbal vocabulary

   Possible Score: 30

Directions For Examiner

IP.3 Word Meaning Test

Step 1

BEGIN NOTE TO TEACHER

(Distribute test booklets to pupils. Have them fill in the identifying information -- name, etc. -- on the cover sheet. When this is completed, start the tape recorder.)

END NOTE TO TEACHER

Step 2

In this test, you will work with word meanings. Look at the example below and listen to the directions.

Example

Row A:	BIG	fair	windy	soft	(large)
Row B:	SHUT	wonder	(close)	wipe	trade

In Row A, the first word is BIG. See, it is written in capital letters and underlined. The other words in the row are -- fair, windy, soft, and large. Which one of these words means the same as BIG? The word that means the same as BIG is large. Draw a circle around the word large. It is the right answer because it means the same as BIG.

Look at the words in Row B. The first word is SHUT. See it is written in capital letters and underlined. The other four words are -- wonder, close (clōz), wipe, trade. Draw a circle around the word that means the same as SHUT. (Pause) You should have circled close (clōz) because close means the same as SHUT.

BEGIN NOTE TO TEACHER

(Stop the tape recorder at this point. Then say:)

Don't look at the test items until you are told to do so.

(Now check to see if the pupils know what to do, how to mark the answers, etc. Then ask:)

Do you understand how you are to write your answers?

(Answer any questions the pupils ask about how their test answers are to be recorded. When questions are answered, turn on the tape recorder to finish the instructions. You have a short pause of about 8-10 seconds on the tape.)

END NOTE TO TEACHER

The test is made up of several rows of words. I'll read the words to you. In each row, your job is to draw a circle around the word that means the same as the first word in the row, the word that is in capitals and underlined.

Work quickly. Do not worry if you can't find the right answer in every row. Probably no one can get them all right.

Step 3

Never turn a page until I tell you to do so. And, each time you do turn a page, turn it under your book. Only the page you are working on should show. Your teacher will show you how to do this. (Pause)

Step 4

Let's do the test. Turn the cover page and fold it under your test book.

Is everyone ready? Row 1: ....

BEGIN NOTE TO TEACHER

(Stop the tape recorder at this point. You have 10 to 20 seconds space on the tape before the next set of directions begins.)

END NOTE TO TEACHER

TESTS: IP.3 Word Meaning

Name _____ Grade _____

Teacher _____ School _____

IP.3

WORD MEANING TEST

Directions

In this test, you will work with word meanings. Look at the example below and listen carefully to the directions.

Example

Row A	**BIG**	fair	windy	soft	large
Row B	**SHUT**	wonder	close	wipe	trade

DO NOT TURN THE PAGE UNTIL TOLD TO DO SO.

1.	GIFT	cart	corner	trick	present
2.	PAIR	couple	trunk	doctor	back
3.	ABOVE	from	over	with	into
4.	BATTLE	fight	listen	believe	write
5.	TALL	true	rainy	hard	high
6.	PROPER	right	alive	blind	false
7.	MODERN	bare	ripe	new	far
8.	SELECT	quit	choose	paint	hit
9.	RAPID	sour	smooth	loud	quick
10.	RELIEF	cabinet	help	handle	farm
11.	ENTIRE	happy	early	whole	new
12.	PAGE	barrel	step	name	poison
13.	LOCATION	simplify	flower	hatchet	place
14.	IDLE	lazy	easy	glad	raw
15.	ATTEMPT	drive	follow	try	wrap

16.	PURCHASE	run	turn	swing	buy
17.	INDICATE	show	spread	erase	sew
18.	ORIGINAL	good	first	sorry	wooden
19.	PERIL	danger	dinner	table	fountain
20.	MINGLE	begin	hurry	break	mix
21.	REMEDY	passenger	delivery	medicine	music
22.	MOLEST	harm	ride	help	climb
23.	NARRATE	hate	decorate	thank	tell
24.	PROHIBIT	print	stop	start	patch
25.	SOLITARY	young	loose	lone	dark
26.	ENCOUNTER	burn	dig	meet	build
27.	SEVER	cut	shout	taste	send
28.	EXTERNAL	several	tardy	eaten	outer
29.	MINIMUM	alike	least	even	middle
30.	ANCIENT	alone	old	healthy	near

Content Description: IP.4, Number Series

1. **Test Name:** IP.4 Number Series Test

   Label for Skill: Reasoning

   Definition of Skill: Abilities involved in using induction to find general rules which will fit sets of data, that is, forming and trying-out of hypothesis about relationships among items in a set

   Possible Score: 50

Directions For Examiner

IP.4 Number Series Test

Step 1

BEGIN NOTE TO TEACHER

(Distribute test booklets to pupils. Have them fill in the identifying information -- name, etc. -- on the cover sheet. When this is completed, start the tape recorder.)

END NOTE TO TEACHER

Step 2

In this test, you will be working with series of numbers which have been arranged according to a rule. Look at the example below and listen to the directions.

Example

1.	6	7	8	9	10	11	(12)	(13)
2.	35	34	33	32	31	30	(29)	(28)

Look at the series of numbers in the first row of the sample. Six numbers in the series are given to you; the blank spaces mean that two numbers in the series are missing. The numbers you see are related in a certain way according to a rule. Your job is to figure out the rule which shows how these numbers are related. Then, you are to use the rule to find the next two numbers in the series, the missing numbers. You will write the missing numbers in the blank spaces.

In the first row, the numbers are related according to this rule: the numbers increase by one; each number is one more than the number which comes before it. Look at the series: 6 7 8 9 10 11. What are the next two numbers? That's right -- 12 and 13: 11 + 1 = 12; and 12 + 1 = 13. Put these numbers in the blank spaces at the end of row 1. (Pause) You do the next row. Find the rule that tells how the numbers are related; then, use the rule to write the missing numbers.

Put these numbers in the blank spaces at the end of row 2. (Pause) Now let's check your answers. The rule is that each number is <u>one less</u> than the number which comes before it. And so, the right answers are 29 and 28.

BEGIN NOTE TO TEACHER

(Stop the tape recorder at this point. Then say:)

Don't look at the test items until you are told to do so.

(Now check to see if the pupils know what to do, how to mark the answers, <u>etc</u>. Then ask:)

Do you understand how you are to write your answers?

(Answer any questions the pupils ask about how their test answers are to be recorded. When questions are answered, turn on the tape recorder to finish the instructions. You have a short pause of about 8-10 seconds on the tape.)

END NOTE TO TEACHER

The test is made up of several series of numbers. A new series appears in each row; and so, a different rule is needed for each row. Do not try to use on a new row a rule you have used before. It will not work. For each row, figure out the new rule; then write the missing numbers. If you can't figure out the rule for a row, go on to the next row. Do the best you can with each row, but move on quickly if you can't find the rule. In other rows, there will be rules which you can find.

There are two parts to the test. We will rest briefly between Parts I and II. You will have <u>four minutes</u> for each part. You probably won't be able to finish either part. There is more here than anyone can do in four minutes. But do as many as you can. Work carefully and work as fast as you can.

<u>Step 3</u>

One more thing. Do not turn the page after Part 1 is finished. And, each time you turn a page, fold it under your book. Only the page you are working on should show. Never have the back of any page showing. Your teacher will show you how to do this. (Pause)

Step 4

Let's do Part I of the test. You have four (4) minutes to find and use as many rules as you can. Remember, work fast and work accurately. Fold under your book the page you wrote your name on and the page that says Part I.

Is everyone ready?

Begin.

Step 5

(After four (4) minutes:) Stop. Put your pencils down, turn to the next page, and rest.

Step 6

(After 30 seconds rest, Part II is done. The directions and procedures in Step 4 and Step 5 are repeated with appropriate modifications for Part II.)

BEGIN NOTE TO TEACHER

(Stop the tape recorder at this point. You have 10 to 20 seconds space on the tape before the next set of directions begins.)

END NOTE TO TEACHER

Name_____ Grade_____

Teacher_____ School_____

IP.4

NUMBER SERIES TEST

Directions

In this test, you will work with series of numbers which have been arranged according to a rule. Look at the example below and listen to the directions.

Example

Row 1.	6	7	8	9	10	11	____	____
Row 2.	35	34	33	32	31.	30	____	____

DO NOT TURN THE PAGE
UNTIL TOLD TO DO SO.

PART I

DO NOT TURN THE PAGE
UNTIL TOLD TO DO SO.

NUMBER SERIES TEST

1.	6	7	8	9	10	11	____	____
2.	35	34	33	32	31	30	____	____
3.	40	45	50	55	60	65	____	____
4.	5	5	6	6	7	7	____	____
5.	22	24	26	28	30	32	____	____
6.	65	60	55	50	45	40	____	____
7.	37	47	57	67	77	87	____	____
8.	18	21	24	27	30	33	____	____
9.	48	46	44	42	40	38	____	____
10.	34	45	56	67	78	89	____	____
11.	8	8	6	6	4	4	____	____
12.	3	7	11	15	19	23	____	____
13.	9	1	7	1	5	1	____	____
14.	25	25	21	21	17	17	____	____
15.	4	5	8	9	12	13	____	____
16.	21	18	16	13	11	8	____	____
17.	1	2	4	8	16	32	____	____
18.	3	4	6	9	13	18	____	____
19.	12	14	13	15	14	16	____	____

GO ON TO THE NEXT PAGE

NUMBER SERIES TEST

20.	25	24	22	21	19	18	____	____
21.	16	12	15	11	14	10	____	____
22.	15	16	14	17	13	18	____	____
23.	1	4	9	16	25	36	____	____
24.	21	18	16	15	12	10	____	____
25.	4	8	10	20	22	44	____	____

STOP
DO NOT TURN THE PAGE
UNTIL TOLD TO DO SO

PART II

DO NOT TURN THE PAGE
UNTIL TOLD TO DO SO.

NUMBER SERIES TEST

1.	6	7	8	9	10	11	____	____
2.	35	34	33	32	31	30	____	____
3.	40	45	50	55	60	65	____	____
4.	5	5	6	6	7	7	____	____
5.	22	24	26	28	30	32	____	____
6.	65	60	55	50	45	40	____	____
7.	37	47	57	67	77	87	____	____
8.	18	21	24	27	30	33	____	____
9.	48	46	44	42	40	38	____	____
10.	34	45	56	67	78	89	____	____
11.	8	8	6	6	4	4	____	____
12.	3	7	11	15	19	23	____	____
13.	9	1	7	1	5	1	____	____
14.	25	25	21	21	17	17	____	____
15.	4	5	8	9	12	13	____	____
16.	21	18	16	13	11	8	____	____
17.	1	2	4	8	16	32	____	____
18.	3	4	6	9	13	18	____	____
19.	12	14	13	15	14	16	____	____

GO ON TO THE NEXT PAGE

NUMBER SERIES TEST

20.	25	24	22	21	19	18	____	____
21.	16	12	15	11	14	10	____	____
22.	15	16	14	17	13	18	____	____
23.	1	4	9	16	25	36	____	____
24.	21	18	16	15	12	10	____	____
25.	4	8	10	20	22	44	____	____

APPENDIX O

GENERAL TEST ADMINISTRATION PROCEDURES

General Test Administration Procedures: Tests #1 through #17

Purposes of the Tests

Tests #1 through #17 will be administered twice in the fall and again in the spring. The purpose of the tests is to obtain information about how pupils grow in achievement in selected aspects of reading over a 7-month instructional period. This information will be used to provide a partial basis for developing new procedures in basal reading instruction.

Forty-one basal reading skills will be measured by the 17 tests. These skills are listed below.

Phonetic Analysis Skills. -- The nine phonetic analysis skills to be measured are these: associating vowel letters and sounds; associating consonant letters and sounds; associating consonant digraphs and sounds; associating consonant blends and sounds; using spelling patterns; identifying syllables in orally and visually presented short words; identifying syllables in orally and visually presented long words; identifying syllables in visually presented short words; identifying syllables in visually presented long words..

Structural Analysis Skills. -- Seven structural analysis skills will be assessed: identifying components of compounds; identifying roots, endings, and suffixes; identifying roots and prefixes; identifying roots and multiple affixes; translating contractions; locating roots by using root-change rules; changing roots by using root-change rules.

Dictionary Skills. -- The ten dictionary skills to be assessed are the following: identifying alphabetical sequences based on first letter; identifying alphabetical sequences based on third letter; identifying alphabetical sequences based on first, second, or third letter; using dictionary guide words; finding definitions of single entry words; finding definitions of multiple entry words; selecting definitions of single entry words; selecting definitions of multiple entry words; interpreting single pronunciation symbols; interpreting multiple pronunciation symbols.

Word Functions Skills. -- Eight word functions skills will be tested: recognizing functions of nouns; recognizing functions of verbs; recognizing functions of adjectives; recognizing functions of adverbs; specifying functions of nouns; specifying functions of verbs; specifying functions of adjectives; specifying functions of adverbs.

Comprehension Skills. -- In this series, seven comprehension skills will be tested: identifying cause-effect relationships directly stated in sentences; identifying main ideas directly stated in paragraphs; identifying main ideas directly stated in stories; identifying cause-effect relationships implied in sentences; identifying main ideas implied in paragraphs; identifying main ideas implied in stories; identifying details in stories.

Nature of the Tests

Seventeen tests will be used to measure these 41 basal reading skills. In addition, skill in identifying words at sight will be measured in the sight vocabulary test; this test will be administered to pupils at the same time project assistants administer the Stanford-Binet test. Tests to measure figurative language and critical reading will be administered later. The administering of this series of tests will need to be spaced over a period of several days. The test administration schedule is presented in Figure 1 (Figure A2 in the final report).

Each test in this series was designed to cover reading instructional levels primer through 6; that is, the material becomes more difficult as one progresses through the test. All of the tests in this series are based on materials found in the Scott, Foresman New Basic Readers series; this series will be used in the project to teach pupils. The vocabulary used in the tests has been controlled, insofar as it is possible, to conform to the vocabulary found at each grade level in this basal reading series. These instruments have been pilot-tested, evaluated, and revised for use with the project classes.

In order to try to hold test directions constant among classes and to lessen the burden of test administration for teachers, all of the test administration directions have been put on tape.

Test Administration Procedures

Listed below is information concerning some of the test administration procedures which need to be followed.

Timing. -- All of the tests are timed tests; however, the time allotments are generous enough to provide a measure of power rather than speed on the parts of pupils. The basis for establishing the time limits for each test was information obtained from pilot testing. The amount of time which will be required for pupils to finish a test will vary from grade level to grade level. For example, some pupils at reading instructional level 2 may be able to do only a few of the test items on any test; pupils at reading instructional level 5 will try all of the items. In some classes of younger pupils, all of the children may finish all they are able to do before the allotted time is up. In these cases, take up the tests of the whole class. Do not take tests one at a time as the children finish. This could affect motivation differentially.

It is important to watch for signs of anxiety or frustration on the part of pupils when they are no longer able to complete items. Figure 1 contains time allotments for each test. To insure accurate timing in test administration, each teacher should use a clock or a watch with a second hand. A stopwatch is not necessary. Start timing when children turn their pages and begin working on the first test item.

Directions. -- Directions for administering the tests have been placed on audio tape for your use. The directions for all 17 tests have been recorded on the same reel, though you will administer the tests in five different sessions. This will mean that you will use the same reel of tape for each of your testing sessions, thus

Figure A2 -- TEST ADMINISTRATION SCHEDULE: TESTS #1 THROUGH #17

(Figure 1 in materials used with teachers)

	Test #	Test name	Test* Time	Reading instructional** levels to receive test
Session 1	1	Adding Endings	5 min	$2\frac{1}{}$ through 6
	2	Meaning of Contractions	2 min	Primer through 6
	3	Finding Roots in Compounds	1 min	Primer through 6
	4	Finding Roots in Inflected and Derived Forms	6 min	$2\frac{1}{}$ through 6
Session 2	5	Alphabetizing Words	4 min	$2\frac{1}{}$ through 6
	6	Dictionary Guide Words	6 min	$2\frac{1}{}$ through 6
	7	Finding Definitions	7 min	$2\frac{1}{}$ through 6
	8	Selecting Definitions	7 min	$2\frac{1}{}$ through 6
Session 3	9	Pronunciation Symbols	4 min	$2\frac{1}{}$ through 6
	10	Phonics Sounds	***	Primer through 6
	11	Phonics Principles	***	$2\frac{1}{}$ through 6
Session 4	12	Finding Syllables--Visual	6 min	$2\frac{1}{}$ through 6
	13	Finding Syllables--Auditory	***	$2\frac{1}{}$ through 6
	14	Word Group--Identification	9 min	Primer through 6
	15	Word Group--Anticipation	9 min	Primer through 6
Sess. 5	16	Sentence Meaning	12 min	Primer through 6
	17	Paragraph Meaning	3'/story	Primer through 6

*Note that these time allotments refer to time allocated for pupils' work after the directions are completed.

**Note that reading instructional level refers to the level where the pupils are placed for reading instruction; it does not refer to the pupils' administrative grade placement.

***On these tests, time was controlled by the presentation of material on the tape recorder.

necessitating your running forward the tape to the appropriate spot for each successive testing session.

A typed copy of administration directions for each test, together with a copy of the pupil's test, has been included in your set of materials. The general procedure for administering each test is as follows.

1. Distribute tests to pupils, and in tests #7, #8, #9, #14, and #15, the accompanying material children will need.

2. Caution children not to turn test pages until told to do so.

3. Have children fill in identifying data on the test (their names, etc.).

4. Start the tape for the major part of the test directions.

5. Stop the tape at the appropriate spot as noted in the directions. You will have approximately 10 seconds blank space on tape. This permits some freedom in stopping the tape.

6. While the tape is stopped, do these things.

   a. Tell children not to look at test items until they are told to do so.

   b. Check to see if children have recorded their answers to the example correctly.

   c. Ask children if they understand how they are to write or mark their answers. Give help on recording answers if help is needed.

7. Start tape to finish instructions on test.

8. Stop tape at end of directions. (On tests #10, #11, and #13, the tape goes through the test items themselves.)

The above is the general format for each test. You are given about 10 to 20 seconds blank space between the end of the directions for one test and the beginning of the next. This means that you don't have to be exact in starting and stopping the tape. Just tell the children that sometimes it may be a few seconds after you start the tape recorder before the voice begins. You should also be sure that the recorder has warmed up for about a minute and that the sound

level is adjusted before beginning the first test. The volume of the tape recorder should be set high enough to permit all children taking the test to hear the voice without strain.

Be careful not to push the recording button on the tape recorder since this will erase the directions on the tape. If you are not familiar with the recorder you are to use, it would be a good idea to practice starting and stopping the machine a few times before using it with the children. Setting the volume appropriately is also important. You should determine the correct setting before the tape is used with the children. If the volume appears too high or too low during the testing, adjust it. The recording is at about the same level, insofar as loudness is concerned.

Giving Information Beyond that Contained in the Directions. -- Since these tests will be given at the beginning of the year, and again later in the year, it must be understood that some of the skills will not have been taught at the time pupils will be taking the tests. The directions give instructions so that pupils will know how to mark their answers, but the directions deliberately do not teach the process the test is measuring. So it is very important that in any explanation to pupils, no teaching of the process is given. For example, if a pupil does not know what a "guide word" or a "compound" is, the teacher should tell him something like this: "We have not studied this yet; just try to figure it out and do the best you can. If you do not know how, do not worry about it." For skills which have not been taught, zero or extremely low scores are expected. Also, the new Scott, Foresman materials we are using have been changed in the grade placement of several skills, so do not be concerned if pupils in your class have not been taught these skills specifically. Reassure pupils that no one is expected to know all of the answers. The tests were designed to obtain a range of scores over a period of a year -- not perfect scores in one testing session. We repeat: Watch the pupils closely for signs of frustration and anxiety; reassure them when necessary.

Giving Help with Spelling, Pronunciation, and Reading. -- Do not give help with spelling, pronunciation, and reading.

Scoring. -- Teachers will not be asked to score any tests.

Return of Test Materials

After each test is given, place all copies back in the appropriate envelope: one for each pupil in the room and all unused tests. When all tests have been given, check to see that all copies of all of the test materials are in the appropriate envelope. The tests and other materials will be picked up at a specified time. Also, please return your set of test administration materials.

General Test Administration Procedures: Figurative Language, Critical Reading, and Intellectual Processes Tests

Purposes of the Tests

The general purposes of the figurative language, critical reading, and intellectual processes tests are to obtain information about the following. The figurative language and critical reading tests are being used to examine performance of pupils on selected aspects of reading achievement which were not assessed in Tests #1 through #17. The intellectual processes tests are being used to examine the role of certain specific cognitive operations in reading achievement. Listed below are the aspects of behavior being assessed and the names of the tests used.

A. Figurative Language and Critical Reading

1. Ability to interpret figurative language -- Figurative Language Test
2. Ability to read critically -- Critical Reading Test

B. Intellectual Processes Tests

1. Conceptualization -- Word Grouping Test
2. Associative memory -- Word Number Test
3. Grasping verbal meaning -- Word Meaning Test
4. Reasoning -- Number Series Test

Nature of the Tests

All of the tests referred to above have been developed for specific purposes. All have been pilot tested, evaluated, and revised for use with the project classes. The nature of the tests is described below.

The figurative language test encompasses idioms, metaphors, similes, and cases of exaggeration and personification. All of these types of figurative language are taught in the Scott, Foresman New Basic Readers series. With very few exceptions, the vocabulary level used in the test has been kept at the 2^2 level or below. N.B.: The pupils do not have to know the terms (idioms, etc.) to respond accurately to the test.

The critical reading test was designed to assess the following: predicting outcomes and actions, discriminating between fact and fiction, and discriminating between fact and opinion. It covers reading instructional levels Primer through 6; that is, the material becomes more difficult as one progresses through the test. This test is based on materials found in the Scott, Foresman New Basic Readers series. The vocabulary level has been controlled, insofar as possible, to conform to the vocabulary found at each grade level in the Scott, Foresman series.

The processes tests were based on the material presented by French, Ekstrom, and Price in their work, Manual for kit of reference tests for cognitive factors.

Scheduling of the Tests

This series of tests should be administered in three sessions. The test administration schedule is presented in Figure 1 (Figure A3 in final report).

Test Administration Procedures

The administration procedures listed below need to be followed.

Timing. -- Processes tests: The processes tests require extremely precise timing with a stopwatch. Therefore, all timing of these tests is done on the tapes in conjunction with the taped directions. Figurative language and critical reading tests: These tests are timed;

however, the time allotments are generous enough to provide a measure of power rather than speed. The teacher is asked to time these tests. To insure accurate timing, the teacher should use a clock or watch with a second hand. A stopwatch is not necessary. Specific amounts of time to allow for the tests are stated in the test directions. Start timing when pupils turn their pages to begin work on the first test item. In some classes of younger pupils, all of the children may finish all they are able to do before the allotted time is up. In those cases, take up the tests of the whole class. Do not take tests one at a time as the children finish. This could affect motivation differentially.

The tests are designed to obtain a range of scores for pupils over reading instructional levels Primer through 6. For this reason, some pupils will not finish the tests. Also, no pupil probably will know the answers to all test items. It is important to watch for signs of pupils' frustration and anxiety when they cannot complete items. Reassure the pupils when appropriate. Tell them that no one is expected to know all of the answers in any test; however, they should do the best they can.

Directions. -- Directions for administering the processes tests and the test items have been recorded on audio tape for your use. The materials for all four processes tests have been recorded on the same reel even though you will administer them in two different sessions. This means that you will use the same reel of tape for each of the two testing sessions, thus necessitating your running forward the tape to the appropriate spot for the second testing session. The directions for administering tests #19 and #20 are not on tape. Administer these tests as you do all other general achievement tests.

A typed copy of administration directions for each test, together with a copy of the pupil's test, has been included in your set of materials. The general procedure for administering each test is as follows.

1. Distribute tests to pupils.
2. Caution pupils not to turn pages until they are told to do so.

3. Have pupils fill in identifying data on the test (their names, etc.).

4. For tests #19 and #20, read the directions to the pupils. Point out to pupils: once they start the tests, they can keep going until they finish, turning to the next page as appropriate.

5. For the processes tests (IP.1, IP.2, IP.3, IP.4) do the following.

   a. Start the tape for the major part of the test directions.

   b. Stop the tape at the appropriate spot as noted in the directions. You will have approximately 10 seconds blank space on tape. This permits some freedom in stopping the tape.

   c. While tape is stopped, do these things.

      1) Tell pupils not to look at the items in the test until they are told to do so.

      2) Check to see if pupils have recorded their answers to the example correctly.

      3) Ask pupils if they understand how they are to write or mark their answers. If necessary, help them understand what to do.

   d. Start tape to finish instructions on test and the test items.

The above is the general format for each test on tape. You are given about 10 to 20 seconds blank space between the end of the directions for one test and the beginning of the next. This means that you don't have to be exact in starting and stopping the tape recorder. Just tell the pupils that sometimes it may be a few seconds after you start the tape recorder before the voice begins. Before you begin each testing session with tapes, you should also be sure that the recorder has warmed up for about a minute and that the sound level is adjusted. The volume of the tape recorder should be set high enough to permit all children taking the test to hear the voice without strain.

Be careful not to push the recording button on the tape recorder since that will erase the directions on the tape. If you are not

familiar with the recorder you are to use, it would be a good idea to practice starting and stopping the machine a few times before using it with the children. Setting the volume appropriately is also important. You should determine the correct setting before the tape is used with the children. If the volume appears too high or too low during the testing, adjust it. Throughout the tape, the loudness remains at about the same level.

Figure A3 -- TEST ADMINISTRATION SCHEDULE: FIGURATIVE LANGUAGE, CRITICAL READING, AND INTELLECTUAL PROCESSES TESTS

(Figure 1 in materials used with teachers)

	Test #	Test name	Test time*	Reading instructional levels to receive test**
Sess. 1	IP.1	Word Grouping Test	9 min.	Primer through 6
	IP.2	Word Number Test	11 min.	Primer through 6
Sess. 2	IP.3	Word Meaning Test	10 min.	Primer through 6
	IP.4	Number Series Test	13 min.	Primer through 6
Sess. 3	19	Figurative Language Test	15 min.	$2\frac{2}{}$ through 6
	20	Critical Reading Test	40 min.	Primer through 6

*Note that the times listed here are approximate and they are total test times. Different (and smaller) amounts of time are devoted to pupils' responding to the test items independent of directions and rest periods.

**Note that reading instructional level refers to the level where the pupils currently are placed for reading instruction; it does not refer to the pupils' administrative grade placement.

Giving Information Beyond that Contained in the Directions. -- Give no help with pronunciation, etc. The directions portray the pupils' task in a test and how they are to mark their answers. However, the

directions, by deliberate intent, do not teach the process, skill, or knowledge the test is measuring. And so, it is very important: in any explanations or comments to pupils, do not teach the process the test is designed to measure.

Scoring. -- Teachers will not be asked to score any tests.

Return of Test Materials

After each test is given, place all copies back in the envelope: one for each pupil in your room and all unused tests. Also, please return your set of test administration materials. When all tests have been given, check to see that all copies of all of the test materials are in the appropriate envelope. The tests and other materials will be picked up at a specified time.

APPENDIX P

BASIC STATISTICAL DATA:
SEQUENCES AMONG BASAL READING SKILLS

Table A9

Phonetic Analysis Skills:
Matrix of Observed r_{jk}, Subtopics in the Expected Order

Basal reading skill	10.1	10.2	10.3	10.8	13.1	12.1	13.2	12.2	11.3
10.1 Associating vowel letters and sounds	1.000	.326	.256	.241	.168	.185	.151	.226	.275
10.2 Associating consonant letters and sounds	.326	1.000	.437	.694	.150	.105	.150	.160	.214
10.3 Associating consonant digraphs and sounds	.256	.437	1.000	.451	.252	.250	.332	.332	.380
10.8 Associating consonant blends and sounds	.241	.694	.451	1.000	.207	.182	.283	.257	.394
13.1 Identifying syllables in orally and visually presented short words	.168	.150	.252	.207	1.000	.613	.512	.387	.428
12.1 Identifying syllables in visually presented short words	.185	.105	.250	.182	.613	1.000	.418	.457	.442
13.2 Identifying syllables in orally and visually presented long words	.151	.150	.332	.283	.512	.418	1.000	.647	.509
12.2 Identifying syllables in visually presented long words	.226	.160	.332	.257	.387	.457	.647	1.000	.589
11.3 Using spelling patterns	.275	.214	.380	.394	.428	.441	.509	.589	1.000

Table A10

Phonetic Analysis Skills:
Matrix of Observed R_{jk} and the A_j, a_j, and q^2 Values

Basal reading skill	10.1	10.2	10.3	10.8	13.1	12.1	13.2	12.2	11.3	R_j	A_j	a_j
10.1	.000	-.487	-.592	-.618	-.776	-.733	-.822	-.646	-.561	-5.234	-.582	.262
10.2	.487	.000	-.359	-.158	-.825	-.978	-.824	-.796	-.669	-4.123	-.458	.348
10.3	.592	.359	.000	-.346	-.600	-.602	-.479	-.478	-.420	-1.975	-.219	.603
10.8	.618	.158	.346	.000	-.684	-.740	-.548	-.590	-.405	-1.843	-.205	.624
13.1	.776	.825	.600	.684	.000	-.213	-.291	-.413	-.369	1.599	.178	1.506
12.1	.733	.978	.602	.740	.213	.000	-.379	-.341	-.355	2.191	.243	1.752
13.2	.822	.824	.479	.548	.291	.379	.000	-.189	-.293	2.862	.318	2.079
12.2	.646	.796	.478	.590	.413	.341	.189	.000	-.230	3.221	.358	2.280
11.3	.561	.669	.420	.405	.369	.355	.293	.230	.000	3.302	.367	2.328

$\Sigma R_j^2 = 88.5212$ $n\Sigma\Sigma R_{jk}^2 = 102.2931$ $q^2 = .8653$

Table A11

Phonetic Analysis Skills:
Matrix of $(A_j - A_k)$, the Reproduced R_{jk}

Basal reading skill	10.1	10.2	10.3	10.8	13.1	12.1	13.2	12.2	11.3
10.1	.000	-.123	-.362	-.377	-.759	-.825	-.899	-.939	-.948
10.2	.123	.000	-.239	-.254	-.636	-.702	-.776	-.816	-.825
10.3	.362	.239	.000	-.015	-.397	-.463	-.537	-.577	-.586
10.8	.377	.254	.015	.000	-.383	-.448	-.523	-.563	-.572
13.1	.759	.636	.397	.383	.000	-.066	-.140	-.180	-.189
12.1	.825	.702	.463	.448	.066	.000	-.075	-.115	-.124
13.2	.899	.776	.537	.523	.140	.075	.000	-.040	-.049
12.2	.939	.816	.577	.563	.180	.115	.040	.000	-.009
11.3	.948	.825	.586	.572	.189	.124	.049	.009	.000

Table A12

Phonetic Analysis Skills:
Matrix of (a_j/a_k), the Reproduced r_{jk}

Basal reading skill	10.1	10.2	10.3	10.8	13.1	12.1	13.2	12.2	11.3
10.1	1.000	.753	.434	.420	.174	.150	.126	.115	.113
10.2	.753	1.000	.577	.558	.231	.199	.168	.153	.150
10.3	.434	.577	1.000	.967	.401	.344	.290	.265	.259
10.8	.420	.558	.967	1.000	.414	.356	.300	.274	.268
13.1	.174	.231	.401	.414	1.000	.860	.724	.661	.647
12.1	.150	.199	.344	.356	.860	1.000	.843	.768	.753
13.2	.126	.168	.290	.300	.724	.843	1.000	.912	.893
12.2	.115	.153	.265	.274	.661	.768	.912	1.000	.979
11.3	.113	.150	.259	.268	.647	.753	.893	.979	1.000

Table A13

Structural Analysis Skills:
Matrix of Observed r_{jk}, Subtopics in the Expected Order

Basal reading skill	3.1	4.1	4.2	4.4	4.3	1.1
3.1 Identifying components of compounds	1.000	.510	.529	.504	.514	.426
4.1 Identifying roots, endings, and suffixes	.510	1.000	.708	.634	.699	.633
4.2 Identifying roots and prefixes	.529	.708	1.000	.701	.761	.645
4.4 Identifying roots and multiple affixes	.504	.634	.701	1.000	.638	.546
4.3 Locating roots by using root-change rules	.514	.699	.761	.638	1.000	.765
1.1 Changing roots by using root-change rules	.426	.633	.645	.546	.765	1.000

Table A14

Structural Analysis Skills:
Matrix of Observed R_{jk} and the A_j, a_j, and q^2 Values

Basal reading skill	3.1	4.1	4.2	4.4	4.3	1.1	R_j	A_j	a_j
3.1	.000	-.293	-.277	-.298	-.289	-.371	-1.528	-.255	.557
4.1	.293	.000	-.150	-.198	-.156	-.199	-.410	-.068	.855
4.2	.277	.150	.000	-.155	-.119	-.190	-.037	-.006	.986
4.4	.298	.198	.155	.000	-.195	-.263	.193	.032	1.077
4.3	.289	.156	.119	.195	.000	-.116	.642	.107	1.280
1.1	.371	.199	.190	.263	.116	.000	1.139	.190	1.548

$\Sigma R_j^2 = 4.2496$ $n\overline{\Sigma\Sigma R_{jk}^2} = 4.7514$ $q^2 = .8943$

Table A15

Structural Analysis Skills:
Matrix of $(A_j - A_k)$, the Reproduced R_{jk}

Basal reading skill	3.1	4.1	4.2	4.4	4.3	1.1
3.1	.000	-.186	-.248	-.287	-.362	-.444
4.1	.186	.000	-.062	-.100	-.175	-.258
4.2	.248	.062	.000	-.038	-.113	-.196
4.4	.287	.100	.038	.000	-.075	-.158
4.3	.362	.175	.113	.075	.000	-.083
1.1	.444	.258	.196	.158	.083	.000

Table A16

Structural Analysis Skills:
Matrix of (a_j/a_k), the Reproduced r_{jk}

Basal reading skill	3.1	4.1	4.2	4.4	4.3	1.1
3.1	1.000	.651	.564	.517	.435	.359
4.1	.651	1.000	.867	.793	.668	.552
4.2	.564	.867	1.000	.916	.770	.637
4.4	.517	.793	.916	1.000	.841	.696
4.3	.435	.668	.770	.841	1.000	.827
1.1	.359	.552	.637	.696	.827	1.000

Table A17

Dictionary Skills:
Matrix of Observed r_{jk}, Subtopics in the Expected Order

Basal reading skill	5.1	5.2	5.3	6.3	7.1	7.2	8.1	8.2
5.1 Identifying alphabetical sequences based on first letter	1.000	.588	.426	.339	.306	.415	.288	.390
5.2 Identifying alphabetical sequences based on third letter	.588	1.000	.614	.473	.413	.531	.309	.435
5.3 Identifying alphabetical sequences based on first, second, or third letter	.426	.614	1.000	.529	.429	.523	.338	.440
6.3 Using dictionary guide words	.339	.473	.529	1.000	.415	.517	.276	.408
7.1 Finding definitions of single entry words	.306	.413	.429	.415	1.000	.710	.703	.547
7.2 Finding definitions of multiple entry words	.415	.531	.523	.517	.710	1.000	.452	.683
8.1 Selecting definitions of single entry words	.288	.309	.338	.276	.703	.452	1.000	.602
8.2 Selecting definitions of multiple entry words	.390	.435	.440	.408	.547	.683	.602	1.000

Table A18

Dictionary Skills:
Matrix of Observed R_{jk} and the A_j, a_j, and q^2 Values

Basal reading skill	5.1	5.2	5.3	6.3	7.1	7.2	8.1	8.2	R_j	A_j	a_j
5.1	.000	-.231	-.370	-.470	-.515	-.383	-.541	-.409	-2.917	-.365	.432
5.2	.231	.000	-.212	-.325	-.384	-.275	-.511	-.362	-1.839	-.230	.589
5.3	.370	.212	.000	-.276	-.368	-.281	-.472	-.356	-1.171	-.146	.714
6.3	.470	.325	.276	.000	-.382	-.286	-.560	-.390	-.547	-.068	.855
7.1	.515	.384	.368	.382	.000	-.149	-.153	-.262	1.085	.136	1.366
7.2	.383	.275	.281	.286	.149	.000	-.345	-.165	.863	.108	1.282
8.1	.541	.511	.472	.560	.153	.345	.000	-.221	2.360	.295	1.972
8.2	.409	.362	.356	.390	.262	.165	.221	.000	2.165	.271	1.865

$\Sigma R_j^2 = 25.7356$ $\quad n\Sigma\Sigma R_{jk}^2 = 29.5048$ $\quad q^2 = .8722$

Table A19

Dictionary Skills:
Matrix of $(A_j - A_k)$, the Reproduced R_{jk}

Basal reading skill	5.1	5.2	5.3	6.3	7.1	7.2	8.1	8.2
5.1	.000	-.135	-.218	-.296	-.500	-.473	-.660	-.635
5.2	.135	.000	-.084	-.162	-.365	-.338	-.525	-.500
5.3	.218	.084	.000	-.078	-.282	-.254	-.441	-.417
6.3	.296	.162	.078	.000	-.204	-.176	-.363	-.339
7.1	.500	.365	.282	.204	.000	.028	-.160	-.135
7.2	.473	.338	.254	.176	-.028	.000	-.187	-.163
8.1	.660	.525	.441	.363	.160	.187	.000	.024
8.2	.635	.500	.417	.339	.135	.163	.024	.000

Table A20

Dictionary Skills:
Matrix of (a_j/a_k), the Reproduced r_{jk}

Basal reading skill	5.1	5.2	5.3	6.3	7.1	7.2	8.1	8.2
5.1	1.000	.733	.605	.505	.316	.337	.219	.232
5.2	.733	1.000	.825	.689	.431	.460	.299	.316
5.3	.605	.825	1.000	.836	.523	.557	.362	.383
6.3	.505	.689	.836	1.000	.626	.667	.433	.458
7.1	.316	.431	.523	.626	1.000	1.000	.693	.732
7.2	.337	.460	.557	.667	1.000	1.000	.650	.687
8.1	.219	.299	.362	.433	.693	.650	1.000	1.000
8.2	.232	.316	.383	.458	.732	.687	1.000	1.000

Table A21

Comprehension Skills -- Directly Stated Ideas and Details: Matrix of Observed r_{jk}, Subtopics in the Expected Order

Basal reading skill	16.1	17.5	17.3	17.1
16.1 Identifying cause-effect relationships directly stated in sentences	1.000	.534	.498	.445
17.5 Identifying details in stories	.534	1.000	.765	.707
17.3 Identifying main ideas directly stated in paragraphs	.498	.765	1.000	.678
17.1 Identifying main ideas directly stated in stories	.445	.707	.678	1.000

Table A22

Comprehension Skills -- Directly Stated Ideas and Details: Matrix of Observed R_{jk} and the A_j, a_j, and q^2 Values

Basal reading skill	16.1	17.5	17.3	17.1	R_j	A_j	a_j
16.1	.000	-.273	-.303	-.352	-.928	-.232	.586
17.5	.273	.000	-.117	-.151	.005	.001	1.003
17.3	.303	.117	.000	-.169	.251	.063	1.155
17.1	.352	.151	.169	.000	.672	.168	1.472

$\Sigma R_j^2 = 1.374$ $n\Sigma\Sigma R_{jk} = 1.418$ $q^2 = .969$

Table A23

Comprehension Skills -- Directly Stated Ideas and Details:
Matrix of $(A_j - A_k)$, the Reproduced R_{jk}

Basal reading skill	16.1	17.5	17.3	17.1
16.1	.000	-.233	-.294	-.400
17.5	.233	.000	-.061	-.167
17.3	.294	.061	.000	-.105
17.1	.400	.167	.105	.000

Table A24

Comprehension Skills -- Directly Stated Ideas and Details:
Matrix of (a_j/a_k), the Reproduced r_{jk}

Basal reading skill	16.1	17.5	17.3	17.1
16.1	1.000	.585	.508	.398
17.5	.585	1.000	.868	.681
17.3	.508	.868	1.000	.785
17.1	.398	.681	.785	1.000

Table A25

Comprehension Skills -- Implicitly Stated Ideas:
Matrix of Observed r_{jk}, Subtopics in the Expected Order

Basal reading skill	16.2	17.4	17.2
16.2 Identifying cause-effect relationships implied in sentences	1.000	.585	.611
17.4 Identifying main ideas implied in paragraphs	.585	1.000	.698
17.2 Identifying main ideas implied in stories	.611	.698	1.000

Table A26

Comprehension Skills -- Implicitly Stated Ideas:
Matrix of Observed R_{jk} and the A_j, a_j, and q^2 Values

Basal reading skill	16.2	17.4	17.2	R_j	A_j	a_j
16.2	.000	-.233	-.214	-.447	-.149	.710
17.4	.233	.000	-.156	.077	.026	1.061
17.2	.214	.156	.000	.370	.123	1.329
	$\Sigma R_j^2 = .343$		$n\Sigma\Sigma R_{jk}^2 = .373$	$q^2 = .9180$		

Table A27

Comprehension Skills -- Implicitly Stated Ideas:
Matrix of $(A_j - A_k)$, the Reproduced R_{jk}

Basal reading skill	16.2	17.4	17.2
16.2	.000	-.175	-.272
17.4	.175	.000	-.098
17.2	.272	.098	.000

Table A28

Comprehension Skills -- Implicitly Stated Ideas:
Matrix of (a_j/a_k), the Reproduced r_{jk}

Basal reading skill	16.2	17.4	17.2
16.2	1.000	.669	.534
17.4	.669	1.000	.798
17.2	.534	.798	1.000

APPENDIX Q

BASIC STATISTICAL DATA: INTELLECTUAL PROCESSES RELATED TO BASAL READING SKILLS

Table A29

Partial Regression Coefficients and t ratios:
Phonetic Analysis Skills

Basal reading skills Y_i	Intellectual processes X_i	b_i	t for b_i
10.1 Associating vowel letters and sounds	Reasoning	.0260	4.123***
10.2 Associating consonant letters and sounds	Conceptualization	.0753	3.116***
10.3 Associating consonant digraphs and sounds	Associative Memory	.0150	2.112**
	Conceptualization	.0561	4.153***
	Reasoning	.0123	2.033***
10.8 Associating consonant blends and sounds	Conceptualization	.1896	5.207***
11.3 Using spelling patterns	Conceptualization	.5042	6.291***
	Verbal Meaning	.1548	3.089***
	Reasoning	.2377	6.746***
13.1 Identifying syllables in orally and visually presented short words	Conceptualization	.1522	5.182***
	Reasoning	.0639	4.863***
12.1 Identifying syllables in visually presented short words	Conceptualization	.1350	3.335***
	Verbal Meaning	.0776	3.059***
	Reasoning	.0828	4.629***
13.2 Identifying syllables in orally and visually presented long words	Conceptualization	.3367	5.180**
	Verbal Meaning	.0824	2.019***
	Reasoning	.1719	6.024***
12.2 Identifying syllables in visually presented long words	Conceptualization	.2292	3.531***
	Verbal Meaning	.1123	2.761***
	Reasoning	.2056	7.170***

**P <.01; ***P <.001

Table A30

Partial Regression Coefficients and t ratios:
Structural Analysis Skills

Basal reading skills Y_i	Intellectual processes X_i	b_i	t for b_i
3.1 Identifying components of compounds	Associative Memory	.0382	2.082**
	Conceptualization	.1381	3.775***
	Verbal Meaning	.1244	5.353***
	Reasoning	.0467	2.895***
4.1 Identifying roots, endings, and suffixes	Associative Memory	.0486	3.891***
	Conceptualization	.0925	3.745***
	Verbal Meaning	.1117	7.100***
	Reasoning	.0735	6.769***
4.2 Identifying roots and prefixes	Associative Memory	.0492	3.086***
	Conceptualization	.1966	6.241***
	Verbal Meaning	.1424	7.093***
	Reasoning	.0927	6.699***
4.4 Identifying roots and multiple affixes	Associative Memory	.0362	2.772***
	Conceptualization	.1283	4.975***
	Verbal Meaning	.0702	4.271***
	Reasoning	.0449	3.963***
2.1 Translating contractions	Conceptualization	.2253	8.128***
	Reasoning	.0800	7.096***
4.3 Locating roots using root-change rules	Associative Memory	.0463	2.315**
	Conceptualization	.3504	8.875***
	Verbal Meaning	.1142	4.541***
	Reasoning	.1283	7.394***

Table A30 (Continued)

Basal reading skills Y_i	Intellectual processes X_i	b_i	t for b_i
1.1 Changing roots by using root-change rules	Associative Memory	.0565	2.539**
	Conceptualization	.3357	7.721***
	Verbal Meaning	.1030	3.707***
	Reasoning	.0948	5.182***

**P <.01; ***P <.001.

Table A31

Partial Regression Coefficients and t ratios: Dictionary Skills

Basal reading skills Y_i	Intellectual processes X_i	b_i	t for b_i
5.1 Identifying alphabetical sequences based on first letter	Associative Memory	.0404	2.567**
	Conceptualization	.1514	4.779***
	Reasoning	.0818	5.778***
5.2 Identifying alphabetical sequences based on third letter	Associative Memory	.0729	3.448***
	Conceptualization	.2366	5.560***
	Reasoning	.1499	7.889***
5.3 Identifying alphabetical sequences based on first, second, or third letter	Associative Memory	.0673	2.249**
	Conceptualization	.3554	5.653***
	Verbal Meaning	.1134	2.841***
	Reasoning	.1146	4.150***

Table A31 (Continued)

Basal reading skills Y_i	Intellectual processes X_i	b_i	t for b_i
6.3 Using dictionary guide words	Conceptualization	.5557	4.455***
	Verbal Meaning	.2945	3.752***
	Reasoning	.1651	2.992***
7.1 Finding definitions of single entry words	Associative Memory	.0546	2.111**
	Conceptualization	.1625	2.992***
	Verbal Meaning	.1348	3.935***
	Reasoning	.0679	2.829***
7.2 Finding definitions of multiple entry words	Associative Memory	.0903	3.111***
	Conceptualization	.2689	4.414***
	Verbal Meaning	.2244	5.838***
	Reasoning	.1208	4.490***
8.1 Selecting definitions of single entry words	Conceptualization	.2321	2.326**
	Reasoning	.1608	4.018***
8.2 Selecting definitions of multiple entry words	Conceptualization	.1473	2.367**
	Verbal Meaning	.1260	2.639***
	Reasoning	.1209	4.723***
9.1 Interpreting single pronunciation symbols	Conceptualization	.2179	4.471***
	Verbal Meaning	.1343	4.400***
	Reasoning	.1213	5.632***
9.2 Interpreting multiple pronunciation symbols	Verbal Meaning	.0829	5.454***

**P <.01; ***P <.001.

Table A32

Partial Regression Coefficients and t ratios:
Word Functions Skills

Basal reading skills Y_i	Intellectual processes X_i	b_i	t for b_i
14.1 Recognizing functions of nouns	Conceptualization	.1349	3.833***
	Verbal Meaning	.1324	5.980***
	Reasoning	.0899	5.836***
14.2 Recognizing functions of verbs	Associative Memory	.0387	2.134**
	Conceptualization	.1686	4.710***
	Verbal Meaning	.1498	6.547***
	Reasoning	.1071	6.806***
14.3 Recognizing functions of adjectives	Conceptualization	.1592	4.932***
	Verbal Meaning	.0967	4.760***
	Reasoning	.0773	5.468***
14.4 Recognizing functions of adverbs	Associative Memory	.0519	2.957***
	Conceptualization	.1384	3.994***
	Verbal Meaning	.0975	4.398***
	Reasoning	.0895	5.872***
15.1 Specifying functions of nouns	Verbal Meaning	.1180	5.993***
	Reasoning	.1155	8.715***
15.2 Specifying functions of verbs	Conceptualization	.1211	3.564***
	Verbal Meaning	.0964	4.539***
	Reasoning	.0991	6.717***
15.3 Specifying functions of adjectives	Conceptualization	.1057	3.203***
	Verbal Meaning	.1066	5.170***
	Reasoning	.0888	6.198***

Table A32 (Continued)

Basal reading skills Y_i	Intellectual processes X_i	b_i	t for b_i
15.4 Specifying functions of adverbs	Verbal Meaning	.0644	3.830***
	Reasoning	.0612	5.410***

**P <.01; ***P <.001

Table A33

Partial Regression Coefficients and t ratios: Comprehension Skills

Basal reading skills Y_i	Intellectual processes X_i	b_i	t for b_i
16.1 Identifying cause-effect relationships directly stated in sentences	Conceptualization	.1024	4.510***
	Verbal Meaning	.0650	4.574**
	Reasoning	.0389	3.854**
17.3 Identifying main ideas directly stated in paragraphs	Conceptualization	.1269	4.633***
	Verbal Meaning	.0940	5.490***
	Reasoning	.0820	6.816***
17.1 Identifying main ideas directly stated in stories	Associative Memory	.0311	2.191**
	Conceptualization	.1443	5.148***
	Verbal Meaning	.0996	5.590***
	Reasoning	.0741	5.987***
16.2 Identifyinc cause-effect relationships implied in sentences	Conceptualization	.1194	5.178***
	Verbal Meaning	.1043	7.223***
	Reasoning	.0402	3.988***

Table A33 (Continued)

Basal reading skills Y_i	Intellectual processes X_i	b_i	t for b_i
17.4 Identifying main ideas implied in paragraphs	Conceptualization	.1252	4.047***
	Verbal Meaning	.1392	7.194***
	Reasoning	.0920	6.775***
17.2 Identifying main ideas implied in stories	Associative Memory	.0252	1.973*
	Conceptualization	.0963	3.824***
	Verbal Meaning	.0846	5.286***
	Reasoning	.0726	6.526***
17.5 Identifying details in stories	Associative Memory	.0790	2.548*
	Conceptualization	.3230	5.290***
	Verbal Meaning	.2533	6.524***
	Reasoning	.1998	7.407***
19.1 Interpreting similes	Verbal Meaning	.0562	6.599***
	Reasoning	.0308	5.326***
19.2 Interpreting idioms	Conceptualization	.0916	5.431***
	Verbal Meaning	.1084	8.193***
	Reasoning	.0544	5.892***
19.3 Interpreting hyperboles	Conceptualization	.0537	3.030***
	Verbal Meaning	.0525	3.778***
	Reasoning	.0610	6.286***
19.4 Interpreting personification	Conceptualization	.0564	2.915***
	Verbal Meaning	.1015	6.689***
	Reasoning	.0488	4.608***
19.5 Interpreting metaphors	Conceptualization	.0703	4.014***
	Verbal Meaning	.1072	7.793***
	Reasoning	.0618	6.436***

*P <.05; **P <.01; ***P <.001.

Table A34

Multiple Correlation Coefficients and Coefficients of Determination: Phonetic Analysis Skills

Basal Reading Skills Y_i	Intellectual Processes X_i	R	R^2 (in %)
10.1 Associating vowel letters and sounds	Reasoning	.1638	2.68
10.2 Associating consonant letters and sounds	Conceptualization	.1245	1.55
10.3 Associating consonant digraphs and sounds	Associative Memory Conceptualization Reasoning	.3076	9.46
10.8 Associating consonant blends and sounds	Conceptualization	.2058	4.24
11.3 Using spelling patterns	Conceptualization Verbal Meaning Reasoning	.5822	33.90
13.1 Identifying syllables in orally and visually presented short words	Conceptualization Reasoning	.4407	19.42
12.1 Identifying syllables in visually presented short words	Conceptualization Verbal Meaning Reasoning	.4663	21.75
13.2 Identifying syllables in orally and visually presented long words	Conceptualization Verbal Meaning Reasoning	.5420	29.37
12.2 Identifying syllables in visually presented long words	Conceptualization Verbal Meaning Reasoning	.5494	30.18

Table A35

Multiple Correlation Coefficients and Coefficients of Determination: Structural Analysis Skills

Basal reading skills Y_i	Intellectual processes X_i	R	R^2 (in %)
3.1 Identifying components of compounds	Associative Memory Conceptualization Verbal Meaning Reasoning	.4937	24.37
4.1 Identifying roots, endings, and suffixes	Associative Memory Conceptualization Verbal Meaning Reasoning	.6481	42.00
4.2 Identifying roots and prefixes	Associative Memory Conceptualization Verbal Meaning Reasoning	.6830	46.65
4.4 Identifying roots and multiple affixes	Associative Memory Conceptualization Verbal Meaning Reasoning	.5358	28.71
2.1 Translating contractions	Conceptualization Reasoning	.5615	31.53
4.3 Locating roots by using root-change rules	Associative Memory Conceptualization Verbal Meaning Reasoning	.6947	48.25

Table A35 (Continued)

Basal reading skills Y_i	Intellectual processes X_i	R	R^2 (in %)
1.1 Changing roots by using root-change rules	Associative Memory Conceptualization Verbal Meaning Reasoning	.6082	36.99

Table A36

Multiple Correlation Coefficients and Coefficients of Determination: Dictionary Skills

Basal reading skills Y_i	Intellectual processes X_i	R	R^2 (in %)
5.1 Identifying alphabetical sequences based on first letter	Associative Memory Conceptualization Reasoning	.4910	24.11
5.2 Identifying alphabetical sequences based on third letter	Associative Memory Conceptualization Reasoning	.5861	34.35
5.3 Identifying alphabetical sequences based on first, second, or third letter	Associative Memory Conceptualization Verbal Meaning Reasoning	.5458	29.79
6.3 Using dictionary guide words	Conceptualization Verbal Meaning Reasoning	.4724	22.31

Table A36 (Continued)

Basal reading skills Y_i	Intellectual processes X_i	R	R^2 (in %)
7.1 Finding definitions of single entry words	Associative Memory Conceptualization Verbal Meaning Reasoning	.4479	20.06
7.2 Finding definitions of multiple entry words	Associative Memory Conceptualization Verbal Meaning Reasoning	.6026	36.31
8.1 Selecting definitions of single entry words	Conceptualization Reasoning	.3385	11.46
8.2 Selecting definitions of multiple entry words	Conceptualization Verbal Meaning Reasoning	.4788	22.92
9.1 Interpreting single pronunciation symbols	Conceptualization Verbal Meaning Reasoning	.5683	32.29
9.2 Interpreting multiple pronunciation symbols	Verbal Meaning	.2425	5.88

Table A37

Multiple Correlation Coefficients and Coefficients of Determination: Word Functions Skills

Basal reading skills Y_i	Intellectual processes X_i	R	R^2 (in %)
14.1 Recognizing functions of nouns	Conceptualization Verbal Meaning Reasoning	.5613	31.51
14.2 Recognizing functions of verbs	Associative Memory Conceptualization Verbal Meaning Reasoning	.6383	40.74
14.3 Recognizing functions of adjectives	Conceptualization Verbal Meaning Reasoning	.5503	30.28
14.4 Recognizing functions of adverbs	Associative Memory Conceptualization Verbal Meaning Reasoning	.5642	31.83
15.1 Specifying functions of nouns	Verbal Meaning Reasoning	.5225	27.30
15.2 Specifying functions of verbs	Conceptualization Verbal Meaning Reasoning	.5453	29.74
15.3 Specifying functions of adjectives	Conceptualization Verbal Meaning Reasoning	.5373	28.87

Table A37 (Continued)

Basal reading skills Y_i	Intellectual processes X_i	R	R^2 (in %)
15.4 Specifying functions of adverbs	Verbal Meaning Reasoning	.3591	12.89

Table A38

Multiple Correlation Coefficients and Coefficients of Determination: Comprehension Skills

Basal reading skills Y_i	Intellectual processes X_i	R	R^2 (in %)
16.1 Identifying cause-effect relationships directly stated in sentences	Conceptualization Verbal Meaning Reasoning	.4903	24.04
17.3 Identifying main ideas directly stated in paragraphs	Conceptualization Verbal Meaning Reasoning	.5962	35.55
17.1 Identifying main ideas directly stated in stories	Associative Memory Conceptualization Verbal Meaning Reasoning	.6136	37.66
16.2 Identifying cause-effect relationships implied in sentences	Conceptualization Verbal Meaning Reasoning	.5802	33.66

Table A38 (Continued)

Basal reading skills Y_i	Intellectual Processes X_i	R	R^2 (in %)
17.4 Identifying main ideas implied in paragraphs	Conceptualization Verbal Meaning Reasoning	.6187	38.28
17.2 Identifying main ideas implied in stories	Associative Memory Conceptualization Verbal Meaning Reasoning	.5891	34.70
17.5 Identifying details in stories	Associative Memory Conceptualization Verbal Meaning Reasoning	.6679	44.61
19.1 Interpreting similes	Verbal Meaning Reasoning	.4432	19.64
19.2 Interpreting idioms	Conceptualization Verbal Meaning Reasoning	.6112	37.36
19.3 Interpreting hyperboles	Conceptualization Verbal Meaning Reasoning	.4679	21.89
19.4 Interpreting personification	Conceptualization Verbal Meaning Reasoning	.4963	24.63
19.5 Interpreting metaphors	Conceptualization Verbal Meaning Reasoning	.5902	34.83

Table A39

Standard[a] Partial Regression Coefficients and Corresponding Percentage Contributions: Phonetic Analysis Skills

Basal reading skills Y_i	Intellectual processes X_i	B_i	% Contribution
10.1 Associating vowel letters and sounds	Reasoning	.1638	2.68
10.2 Associating consonant letters and sounds	Conceptualization	.1245	1.55
10.3 Associating consonant digraphs and sounds	Conceptualization	.1990	5.59
	Verbal Meaning	.0859	1.97
	Reasoning	.0984	2.38
10.8 Associating consonant blends and sounds	Conceptualization	.2058	4.23
11.3 Using spelling patterns	Conceptualization	.2707	13.76
	Verbal Meaning	.1267	5.39
	Reasoning	.2872	14.74
13.1 Identifying syllables in orally and visually presented short words	Conceptualization	.2573	10.10
	Reasoning	.2415	9.31
12.1 Identifying syllables in visually presented short words	Conceptualization	.1740	6.70
	Verbal Meaning	.1505	5.33
	Reasoning	.2374	9.70
13.2 Identifying syllables in orally and visually presented long words	Conceptualization	.2555	11.93
	Verbal Meaning	.0941	3.43
	Reasoning	.2915	13.99

[a]The symbol, B, is used here, and subsequently in the tables, to refer to the standard partial regression coefficients.

Table A39 (Continued)

Basal reading skills Y_i	Intellectual processes X_i	B_i	% Contribution
12.2 Identifying syllables in visually presented long words	Conceptualization	.1740	7.58
	Verbal Meaning	.1283	4.95
	Reasoning	.3473	17.64

Table A40

Standard Partial Regression Coefficients and Corresponding Percentage Contributions: Structural Analysis Skills

Basal reading skills Y_i	Intellectual processes X_i	B_i	% Contribution
3.1 Identifying components of compounds	Associative Memory	.0785	1.93
	Conceptualization	.1740	7.01
	Verbal Meaning	.2389	10.27
	Reasoning	.1330	5.13
4.1 Identifying roots, endings, and suffixes	Associative Memory	.1287	4.52
	Conceptualization	.1510	7.52
	Verbal Meaning	.2774	15.17
	Reasoning	.2706	14.76
4.2 Identifying roots and prefixes	Associative Memory	.0979	3.31
	Conceptualization	.2413	13.64
	Verbal Meaning	.2658	15.07
	Reasoning	.2568	14.61

Table A40 (Continued)

Basal reading skills Y_i	Intellectual processes X_i	B_i	% Contribution
4.4 Identifying roots and multiple affixes	Associative Memory	.1017	2.88
	Conceptualization	.2224	10.13
	Verbal Meaning	.1850	8.03
	Reasoning	.1757	7.65
2.1 Translating contractions	Conceptualization	.3360	17.10
	Reasoning	.2933	14.41
4.3 Locating roots by using root-change rules	Associative Memory	.0723	2.26
	Conceptualization	.3380	20.75
	Verbal Meaning	.1676	8.79
	Reasoning	.2792	16.43
1.1 Changing roots by using root-change rules	Associative Memory	.0878	2.53
	Conceptualization	.3214	17.44
	Verbal Meaning	.1504	6.88
	Reasoning	.2087	10.12

Table A41

Standard Partial Regression Coefficients and Corresponding Percentage Contributions: Dictionary Skills

Basal reading skills Y_i	Intellectual processes X_i	B_i	% Contribution
5.1 Identifying alphabetical sequences based on first letter	Associative Memory	.1059	2.27
	Conceptualization	.2331	9.68
	Reasoning	.2808	12.17

Table A41 (Continued)

Basal reading skills Y_i	Intellectual processes X_i	B_i	% Contribution
5.2 Identifying alphabetical sequences based on third letter	Associative Memory	.1323	3.45
	Conceptualization	.2523	12.15
	Reasoning	.3566	18.73
5.3 Identifying alphabetical sequences based on first, second, or third letter	Associative Memory	.0902	2.04
	Conceptualization	.2801	13.50
	Verbal Meaning	.1340	5.33
	Reasoning	.2014	8.90
6.3 Using dictionary guide words	Conceptualization	.2322	9.59
	Verbal Meaning	.1848	6.99
	Reasoning	.1531	5.72
7.1 Finding definitions of single entry words	Associative Memory	.0902	1.83
	Conceptualization	.1582	5.71
	Verbal Meaning	.1976	7.34
	Reasoning	.1471	5.17
7.2 Finding definitions of multiple entry words	Associative Memory	.1187	3.22
	Conceptualization	.2082	10.09
	Verbal Meaning	.2616	13.02
	Reasoning	.2084	9.96
8.1 Selecting definitions of single entry words	Conceptualization	.1466	3.59
	Reasoning	.2532	7.86
8.2 Selecting definitions of multiple entry words	Conceptualization	.1444	4.66
	Verbal Meaning	.1647	5.74
	Reasoning	.2954	12.51

Table A41 (Continued)

Basal reading skills Y_i	Intellectual processes X_i	B_i	% Contribution
9.1 Interpreting single pronunciation symbols	Conceptualization	.2170	10.24
	Verbal Meaning	.2014	8.91
	Reasoning	.2686	13.13
9.2 Interpreting multiple pronunciation symbols	Verbal Meaning	.2425	5.88

Table A42

Standard Partial Regression Coefficients and Corresponding Percentage Contributions: Word Functions Skills

Basal reading skills Y_i	Intellectual processes X_i	B_i	% Contribution
14.1 Recognizing functions of nouns	Conceptualization	.1674	7.58
	Verbal Meaning	.2487	11.79
	Reasoning	.2513	12.12
14.2 Recognizing functions of verbs	Associative Memory	.0707	2.07
	Conceptualization	.1919	9.90
	Verbal Meaning	.2581	13.77
	Reasoning	.2745	14.99
14.3 Recognizing functions of adjectives	Conceptualization	.2174	10.16
	Verbal Meaning	.1997	8.89
	Reasoning	.2375	11.21

Table A42 (Continued)

Basal reading skills Y_i	Intellectual processes X_i	B_i	% Contribution
14.4 Recognizing functions of adverbs	Associative Memory	.1051	3.07
	Conceptualization	.1745	7.96
	Verbal Meaning	.1860	8.41
	Reasoning	.2540	12.37
15.1 Specifying functions of nouns	Verbal Meaning	.2419	10.38
	Reasoning	.3518	16.91
15.2 Specifying functions of verbs	Conceptualization	.1584	6.94
	Verbal Meaning	.1923	8.39
	Reasoning	.2939	14.40
15.3 Specifying functions of adjectives	Conceptualization	.1432	6.10
	Verbal Meaning	.2204	9.80
	Reasoning	.2729	12.96
15.4 Specifying functions of adverbs	Verbal Meaning	.1692	5.01
	Reasoning	.2391	7.87

Table A43

Standard Partial Regression Coefficients and Corresponding Percentage Contributions: Comprehension Skills

Basal reading skills Y_i	Intellectual processes X_i	B_i	% Contribution
16.1 Identifying cause-effect relationships directly stated in sentences	Conceptualization	.2078	8.75
	Verbal Meaning	.2009	8.18
	Reasoning	.1754	7.09

Table A43 (Continued)

Basal reading skills Y_i	Intellectual processes X_i	B_i	% Contribution
17.3 Identifying main ideas directly stated in paragraphs	Conceptualization	.1975	9.66
	Verbal Meaning	.2233	10.81
	Reasoning	.2878	15.06
17.1 Identifying main ideas directly stated in stories	Associative Memory	.0751	2.17
	Conceptualization	.2159	10.98
	Verbal Meaning	.2271	11.43
	Reasoning	.2501	13.05
16.2 Identifying cause-effect relationships implied in sentences	Conceptualization	.2230	10.81
	Verbal Meaning	.2964	15.06
	Reasoning	.1696	7.77
17.4 Identifying main ideas implied in paragraphs	Conceptualization	.1688	8.27
	Verbal Meaning	.2863	15.10
	Reasoning	.2799	14.89
17.2 Identifying main ideas implied in stories	Associative Memory	.0694	1.91
	Conceptualization	.1645	7.71
	Verbal Meaning	.2203	10.63
	Reasoning	.2798	14.43
17.5 Identifying details in stories	Associative Memory	.0827	2.62
	Conceptualization	.2097	11.36
	Verbal Meaning	.2507	13.76
	Reasoning	.2926	16.84
19.1 Interpreting similes	Verbal Meaning	.2799	11.18
	Reasoning	.2259	8.45

Table A43 (Continued)

Basal reading skills Y_i	Intellectual processes X_i	B_i	% Contribution
19.2 Interpreting idioms	Conceptualization	.2021	9.08
	Verbal Meaning	.3160	16.64
	Reasoning	.2336	11.63
19.3 Interpreting hyperboles	Conceptualization	.1259	4.13
	Verbal Meaning	.1627	5.93
	Reasoning	.2783	11.82
19.4 Interpreting personification	Conceptualization	.1190	4.00
	Verbal Meaning	.2830	12.46
	Reasoning	.2004	8.16
19.5 Interpreting metaphors	Conceptualization	.1525	6.23
	Verbal Meaning	.3068	15.66
	Reasoning	.2605	12.92

APPENDIX R

TRENDS IN ACHIEVEMENT OF BASAL READING SKILLS OVER READING INSTRUCTIONAL LEVELS

Table A44

Trends in Achievement by the Retarded Group:
Phonetic Analysis Skills

Skill	R.I.L.	Means	Source	df	Mean squares
10.1 Associating vowel letters and sounds	2	6.70	Linear	1	1.16
	3	7.04	Quadratic	1	0.08
	4	6.85	Cubic	1	1.16
	5	7.07	Error	104	2.75
10.2 Associating consonant letters and sounds	2	16.81	Linear	1	0.47
	3	16.74	Quadratic	1	0.59
	4	16.48	Cubic	1	0.60
	5	16.70	Error	104	10.15
10.3 Associating consonant digraphs and sounds	2	3.44	Linear	1	0.82
	3	3.44	Quadratic	1	0.01
	4	3.67	Cubic	1	0.31
	5	3.63	Error	104	1.34
10.8 Associating consonant blends and sounds	2	16.04	Linear	1	0.47
	3	14.89	Quadratic	1	6.26
	4	15.74	Cubic	1	12.45
	5	15.56	Error	104	17.23
11.3 Using spelling patterns	2	10.96	Linear	1	222.98**
	3	10.59	Quadratic	1	1.56
	4	14.00	Cubic	1	67.56
	5	14.11	Error	104	22.16
13.1 Identifying syllables in orally and visually presented short words	2	--	Linear	1	54.00
	3	10.67	Quadratic	1	4.17
	4	11.19	Cubic	1	--
	5	12.67	Error	78	15.15

Table A44 (Continued)

Skill	R.I.L.	Means	Source	df	Mean squares
12.1 Identifying syllables in visually presented short words	2	--	Linear	1	68.91*
	3	9.15	Quadratic	1	0.50
	4	10.11	Cubic	1	--
	5	11.41	Error	78	15.67
13.2 Identifying syllables in orally and visually presented long words	2	--	Linear	1	20.17
	3	2.85	Quadratic	1	0.06
	4	3.41	Cubic	1	--
	5	4.07	Error	78	13.48
12.2 Identifying syllables in visually presented long words	2	--	Linear	1	25.35
	3	2.33	Quadratic	1	0.75
	4	3.22	Cubic	1	--
	5	3.70	Error	78	11.26

*P <.05; **P <.01

Table A45

Trends in Achievement by the Retarded Group:
Structural Analysis Skills

Skill	R.I.L.	Means	Source	df	Mean squares
3.1 Identifying components of compounds	2	14.85	Linear	1	629.42**
	3	18.11	Quadratic	1	46.68
	4	20.59	Cubic	1	1.56
	5	21.22	Error	104	24.19

Table A45 (Continued)

Skill	R.I.L.	Means	Source	df	Mean squares
4.1 Identifying roots, endings, and suffixes	2	5.07	Linear	1	108.45**
	3	5.85	Quadratic	1	1.33
	4	7.26	Cubic	1	3.92
	5	7.59	Error	104	5.07
4.2 Identifying roots and prefixes	2	1.56	Linear	1	77.82**
	3	1.37	Quadratic	1	0.23
	4	3.41	Cubic	1	24.49
	5	3.41	Error	104	8.50
4.4 Identifying roots and multiple affixes	2	2.52	Linear	1	30.82**
	3	3.00	Quadratic	1	2.08
	4	3.89	Cubic	1	2.54
	5	3.81	Error	104	4.36
2.1 Translating contractions	2	3.56	Linear	1	147.27**
	3	4.81	Quadratic	1	13.37
	4	6.59	Cubic	1	8.07
	5	6.44	Error	104	10.04
4.3 Locating roots by using root-change rules	2	2.78	Linear	1	161.16**
	3	3.67	Quadratic	1	0.45
	4	5.26	Cubic	1	3.75
	5	5.89	Error	104	11.95
1.1 Changing roots by using root-change rules	2	1.22	Linear	1	48.60**
	3	1.26	Quadratic	1	3.70
	4	2.15	Cubic	1	1.56
	5	2.93	Error	104	4.99

**$P < .01$.

Table A46

Trends in Achievement by the Retarded Group:
Dictionary Skills

Skill	R.I.L.	Means	Source	df	Mean squares
5.1 Identifying alphabetical sequences based on first letter	2	--	Linear	1	90.74*
	3	6.93	Quadratic	1	7.14
	4	8.85	Cubic	1	--
	5	9.52	Error	78	14.90
5.2 Identifying alphabetical sequences based on third letter	2	--	Linear	1	104.17*
	3	3.85	Quadratic	1	24.50
	4	6.41	Cubic	1	--
	5	6.63	Error	78	16.31
5.3 Identifying alphabetical sequences based on first, second, or third letter	2	--	Linear	1	121.50*
	3	2.44	Quadratic	1	48.90
	4	5.59	Cubic	1	--
	5	5.44	Error	78	18.25
6.3 Using dictionary guide words	2	--	Linear	1	271.13**
	3	5.59	Quadratic	1	0.06
	4	7.89	Cubic	1	--
	5	10.07	Error	78	26.22
7.1 Finding definitions of single entry words	2	--	Linear	1	127.57**
	3	3.37	Quadratic	1	12.50
	4	4.07	Cubic	1	--
	5	6.44	Error	78	10.81
7.2 Finding definitions of multiple entry words	2	--	Linear	1	216.00**
	3	3.56	Quadratic	1	10.89
	4	4.78	Cubic	1	--
	5	7.56	Error	78	14.33

Table A46 (Continued)

Skill	R.I.L.	Means	Source	df	Mean squares
8.1 Selecting definitions of single entry words	2	--	Linear	1	9.80
	3	--	Quadratic	1	--
	4	5.63	Cubic	1	--
	5	6.48	Error	52	15.52
8.2 Selecting definitions of multiple entry words	2	--	Linear	1	1.19
	3	--	Quadratic	1	--
	4	3.81	Cubic	1	--
	5	4.11	Error	52	7.98
9.1 Interpreting single pronunciation symbols	2	--	Linear	1	11.57
	3	4.48	Quadratic	1	0.15
	4	4.85	Cubic	1	--
	5	5.41	Error	78	8.09
9.2 Interpreting multiple pronunciation symbols	2	--	Linear	1	1.50
	3	1.63	Quadratic	1	0.15
	4	1.70	Cubic	1	--
	5	1.96	Error	78	2.91

*P <.05; **P <.01

Table A47

Trends in Achievement by the Retarded Group:
Word Functions Skills

Skill	R.I.L.	Means	Source	df	Mean squares
14.1 Recognizing functions of nouns	2	2.52	Linear	1	113.90**
	3	3.52	Quadratic	1	13.37
	4	5.37	Cubic	1	13.07
	5	4.96	Error	104	5.70
14.2 Recognizing functions of verbs	2	2.30	Linear	1	78.59**
	3	2.78	Quadratic	1	14.81
	4	5.07	Cubic	1	35.27**
	5	4.07	Error	104	4.88
14.3 Recognizing functions of adjectives	2	2.15	Linear	1	102.27**
	3	2.74	Quadratic	1	0.01
	4	4.00	Cubic	1	2.27
	5	4.63	Error	104	4.37
14.4 Recognizing functions of adverbs	2	2.07	Linear	1	43.92**
	3	2.33	Quadratic	1	0.00
	4	3.37	Cubic	1	3.27
	5	3.63	Error	104	3.97
15.1 Specifying functions of nouns	2	2.19	Linear	1	42.22**
	3	2.63	Quadratic	1	0.45
	4	3.56	Cubic	1	2.02
	5	3.74	Error	104	5.60
15.2 Specifying functions of verbs	2	2.19	Linear	1	43.35**
	3	2.67	Quadratic	1	1.12
	4	3.67	Cubic	1	2.82
	5	3.74	Error	104	3.97

Table A47 (Continued)

Skill	R.I.L.	Means	Source	df	Mean squares
15.3 Specifying functions of adjectives	2	1.37	Linear	1	86.40**
	3	2.37	Quadratic	1	4.48
	4	3.48	Cubic	1	1.45
	5	3.67	Error	104	3.76
15.4 Specifying functions of adverbs	2	1.59	Linear	1	14.67
	3	2.52	Quadratic	1	11.34
	4	2.93	Cubic	1	0.09
	5	2.56	Error	104	3.88

**P <.01.

Table A48

Trends in Achievement by the Retarded Group:
Comprehension Skills

Skill	R.I.L.	Means	Source	df	Mean squares
16.1 Identifying cause-effect relationships directly stated in sentences	2	6.63	Linear	1	107.56**
	3	6.52	Quadratic	1	0.75
	4	8.67	Cubic	1	23.65**
	5	8.89	Error	104	2.94
17.3 Identifying main ideas directly stated in paragraphs	2	3.63	Linear	1	117.60**
	3	4.56	Quadratic	1	1.81
	4	5.89	Cubic	1	2.40
	5	6.30	Error	104	4.40

Table A48 (Continued)

Skill	R.I.L.	Means	Source	df	Mean squares
17.1 Identifying main ideas directly stated in stories	2	2.96	Linear	1	104.02**
	3	3.63	Quadratic	1	6.75
	4	4.07	Cubic	1	2.82
	5	5.74	Error	104	3.70
16.2 Identifying cause-effect relationships implied in sentences	2	5.78	Linear	1	140.05**
	3	6.96	Quadratic	1	4.90
	4	8.37	Cubic	1	2.27
	5	8.70	Error	1	3.17
17.4 Identifying main ideas implied in paragraphs	2	3.52	Linear	1	92.09**
	3	4.04	Quadratic	1	0.45
	4	5.52	Cubic	1	6.45
	5	5.78	Error	104	5.16
17.2 Identifying main ideas implied in stories	2	3.85	Linear	1	162.25**
	3	4.78	Quadratic	1	4.48
	4	6.74	Cubic	1	11.27
	5	6.85	Error	104	4.70
17.5 Identifying details in stories	2	6.48	Linear	1	368.36**
	3	8.78	Quadratic	1	23.15
	4	10.85	Cubic	1	2.67
	5	11.30	Error	104	20.25
19.1 Interpreting similes	2	5.33	Linear	1	13.07*
	3	5.44	Quadratic	1	0.33
	4	5.89	Cubic	1	0.27
	5	6.22	Error	104	2.63

Table A48 (Continued)

Skill	R.I.L.	Means	Source	df	Mean squares
19.2 Interpreting idioms	2	3.70	Linear	1	48.60**
	3	3.89	Quadratic	1	1.33
	4	4.78	Cubic	1	1.25
	5	5.41	Error	104	4.28
19.3 Interpreting hyperboles	2	4.74	Linear	1	0.15
	3	5.11	Quadratic	1	1.56
	4	5.00	Cubic	1	0.31
	5	4.89	Error	104	4.14
19.4 Interpreting personification	2	3.85	Linear	1	61.34**
	3	5.07	Quadratic	1	17.93
	4	6.15	Cubic	1	2.40
	5	5.74	Error	104	4.75
19.5 Interpreting metaphors	2	2.85	Linear	1	112.98**
	3	3.93	Quadratic	1	0.23
	4	4.74	Cubic	1	0.15
	5	5.63	Error	104	3.76
20.1 Predicting outcomes and actions	2	5.48	Linear	1	86.40**
	3	7.26	Quadratic	1	0.15
	4	6.48	Cubic	1	37.34**
	5	8.41	Error	104	5.18
20.2 Discriminating between fact and fiction	2	6.15	Linear	1	145.19**
	3	8.44	Quadratic	1	1.33
	4	7.26	Cubic	1	74.07**
	5	10.00	Error	104	6.45

Table A48 (Continued)

Skill	R.I.L.	Means	Source	df	Mean squares
20.3 Discriminating between fact and opinion	2	4.78	Linear	1	45.65**
	3	5.19	Quadratic	1	2.68
	4	5.56	Cubic	1	0.67
	5	6.59	Error	104	4.44

*P <.05; **P <.01

Table A49

Trends in Achievement by the Retarded Group:
Identifying Words at Sight

Skill	R.I.L.	Means	Source	df	Mean squares
18.1 Identifying words at sight	2	13.30	Linear	1	1964.63**
	3	15.52	Quadratic	1	35.59
	4	20.00	Cubic	1	6.67
	5	24.52	Error	104	43.43

**P <.01

Table A50

Trends in Achievement by the Normal Group:
Phonetic Analysis Skills

Skill	R.I.L.	Means	Source	df	Mean squares
10.1 Associating vowel letters and sounds	2	6.96	Linear	1	2.67
	3	7.67	Quadratic	1	1.33
	4	7.30	Cubic	1	3.92
	5	7.56	Error	104	2.22
10.2 Associating consonant letters and sounds	2	17.33	Linear	1	0.00
	3	17.78	Quadratic	1	0.75
	4	16.85	Cubic	1	12.76
	5	17.63	Error	104	7.02
10.3 Associating consonant digraphs and sounds	2	3.78	Linear	1	0.27
	3	3.26	Quadratic	1	0.59
	4	3.93	Cubic	1	5.81*
	5	3.70	Error	104	1.34
10.8 Associating consonant blends and sounds	2	15.33	Linear	1	101.40**
	3	16.52	Quadratic	1	1.81
	4	16.52	Cubic	1	11.27
	5	18.22	Error	104	14.52
11.3 Using spelling patterns	2	12.00	Linear	1	498.82**
	3	15.63	Quadratic	1	52.08
	4	17.07	Cubic	1	3.24
	5	17.93	Error	104	30.08
13.1 Identifying syllables in orally and visually presented short words	2	--	Linear	1	83.13**
	3	12.52	Quadratic	1	0.30
	4	13.63	Cubic	1	--
	5	15.00	Error	78	8.78

Table A50 (Continued)

Skill	R.I.L.	Means	Source	df	Mean squares
12.1 Identifying syllables in visually presented short words	2	--	Linear	1	174.24**
	3	9.74	Quadratic	1	10.38
	4	12.30	Cubic	1	--
	5	13.33	Error	78	9.50
13.2 Identifying syllables in orally and visually presented long words	2	--	Linear	1	64.46
	3	7.93	Quadratic	1	102.72*
	4	6.63	Cubic	1	--
	5	10.11	Error	78	17.01
12.2 Identifying syllables in visually presented long words	2	--	Linear	1	90.74**
	3	4.07	Quadratic	1	13.06
	4	4.52	Cubic	1	--
	5	6.67	Error	78	11.37

*P <.05; **P <.01.

Table A51

Trends in Achievement by the Normal Group:
Structural Analysis Skills

Skill	R.I.L.	Means	Source	df	Mean squares
3.1 Identifying components of compounds	2	12.67	Linear	1	1594.79**
	3	17.26	Quadratic	1	7.26
	4	19.74	Cubic	1	13.70
	5	23.30	Error	104	16.73
4.1 Identifying roots, endings, and suffixes	2	5.19	Linear	1	211.56**
	3	6.74	Quadratic	1	6.26
	4	6.81	Cubic	1	20.81**
	5	9.33	Error	104	2.28

Table A51 (Continued)

Skill	R.I.L.	Means	Source	df	Mean squares
4.2 Identifying roots and prefixes	2	0.48	Linear	1	758.52**
	3	2.41	Quadratic	1	5.33
	4	4.78	Cubic	1	0.00
	5	7.59	Error	104	5.79
4.4 Identifying roots and multiple affixes	2	1.74	Linear	1	273.07**
	3	3.33	Quadratic	1	0.04
	4	4.44	Cubic	1	1.45
	5	6.11	Error	104	3.27
2.1 Translating contractions	2	5.33	Linear	1	352.03**
	3	4.89	Quadratic	1	37.93*
	4	7.81	Cubic	1	25.79
	5	9.74	Error	104	6.90
4.3 Locating roots by using root-change rules	2	2.15	Linear	1	1014.07**
	3	5.22	Quadratic	1	8.33
	4	6.63	Cubic	1	26.67
	5	10.81	Error	104	7.10
1.1 Changing roots by using root-change rules	2	0.44	Linear	1	470.40**
	3	2.07	Quadratic	1	9.48
	4	3.41	Cubic	1	4.37
	5	6.22	Error	104	4.71

*P <.05; **P <.01.

Table A52

Trends in Achievement by the Normal Group:
Dictionary Skills

Skill	R.I.L.	Means	Source	df	Mean squares
5.1 Identifying alphabetical sequences based on first letter	2	--	Linear	1	112.67**
	3	8.44	Quadratic	1	0.00
	4	9.89	Cubic	1	--
	5	11.33	Error	78	5.97
5.2 Identifying alphabetical sequences based on third letter	2	--	Linear	1	696.96**
	3	3.11	Quadratic	1	0.89
	4	6.93	Cubic	1	--
	5	10.30	Error	78	8.16
5.3 Identifying alphabetical sequences based on first, second, or third letter	2	--	Linear	1	567.13**
	3	1.67	Quadratic	1	44.60
	4	3.33	Cubic	1	--
	5	8.15	Error	78	11.56
6.3 Using dictionary guide words	2	--	Linear	1	1462.24**
	3	6.74	Quadratic	1	156.06*
	4	9.00	Cubic	1	--
	5	17.15	Error	78	29.88
7.1 Finding definitions of single entry words	2	--	Linear	1	633.80**
	3	3.04	Quadratic	1	96.45**
	4	4.15	Cubic	1	--
	5	9.89	Error	78	8.37
7.2 Finding definitions of multiple entry words	2	--	Linear	1	1300.46**
	3	2.85	Quadratic	1	254.38**
	4	4.00	Cubic	1	--
	5	12.67	Error	78	12.48

Table A52 (Continued)

Skill	R.I.L.	Means	Source	df	Mean squares
8.1 Selecting definitions of single entry words	2	--	Linear	1	332.52**
	3	--	Quadratic	1	--
	4	4.52	Cubic	1	--
	5	9.48	Error	52	9.53
8.2 Selecting definitions of multiple entry words	2	--	Linear	1	133.80**
	3	--	Quadratic	1	--
	4	3.63	Cubic	1	--
	5	6.78	Error	52	5.21
9.1 Interpreting single pronunciation symbols	2	--	Linear	1	167.13**
	3	4.59	Quadratic	1	10.38
	4	7.11	Cubic	1	--
	5	8.11	Error	78	8.13
9.2 Interpreting multiple pronunciation symbols	2	--	Linear	1	7.41
	3	0.70	Quadratic	1	18.00**
	4	2.07	Cubic	1	--
	5	1.44	Error	78	2.05

*P <.05; **P <.01.

Table A53

Trends in Achievement by the Normal Group:
Word Functions Skills

Skills	R.I.L.	Means	Source	df	Mean squares
14.1 Recognizing functions of nouns	2	3.52	Linear	1	195.60**
	3	3.30	Quadratic	1	52.08**
	4	4.56	Cubic	1	0.05
	5	7.11	Error	104	4.54

Table A53 (Continued)

Skill	R.I.L.	Means	Source	df	Mean squares
14.2 Recognizing functions of verbs	2	2.15	Linear	1	294.82**
	3	3.00	Quadratic	1	8.90
	4	4.56	Cubic	1	0.09
	5	6.56	Error	104	4.78
14.3 Recognizing functions of adjectives	2	2.26	Linear	1	163.35**
	3	2.44	Quadratic	1	34.45**
	4	3.22	Cubic	1	1.56
	5	5.67	Error	104	3.45
14.4 Recognizing functions of adverbs	2	2.37	Linear	1	88.82**
	3	2.19	Quadratic	1	36.75**
	4	2.74	Cubic	1	0.98
	5	4.89	Error	104	2.79
15.1 Specifying functions of nouns	2	2.41	Linear	1	58.67**
	3	2.78	Quadratic	1	8.33
	4	3.04	Cubic	1	2.40
	5	4.52	Error	104	3.55
15.2 Specifying functions of verbs	2	2.26	Linear	1	131.03**
	3	2.70	Quadratic	1	4.48
	4	3.89	Cubic	1	0.60
	5	5.15	Error	104	3.80
15.3 Specifying functions of adjectives	2	2.04	Linear	1	66.15**
	3	2.44	Quadratic	1	5.79
	4	2.89	Cubic	1	0.98
	5	4.22	Error	104	3.03
15.4 Specifying functions of adverbs	2	2.15	Linear	1	2.54
	3	2.44	Quadratic	1	2.08
	4	1.93	Cubic	1	6.45
	5	2.78	Error	104	2.08

**$p < .01$.

Table A54

Trends in Achievement by the Normal Group: Comprehension Skills

Skill	R.I.L.	Means	Source	df	Mean squares
16.1 Identifying cause-effect relationships directly stated in sentences	2	6.70	Linear	1	116.67**
	3	7.30	Quadratic	1	1.12
	4	9.04	Cubic	1	9.87*
	5	9.22	Error	104	2.45
17.3 Identifying main ideas directly stated in paragraphs	2	3.96	Linear	1	165.56**
	3	5.07	Quadratic	1	3.34
	4	6.70	Cubic	1	4.09
	5	7.11	Error	104	3.20
17.1 Identifying main ideas directly stated in stories	2	3.33	Linear	1	177.96**
	3	4.67	Quadratic	1	0.33
	4	5.70	Cubic	1	0.19
	5	6.81	Error	104	4.02
16.2 Identifying cause-effect relationships implied in sentences	2	6.22	Linear	1	172.27**
	3	7.52	Quadratic	1	1.12
	4	8.70	Cubic	1	0.05
	5	9.59	Error	104	2.67
17.4 Identifying main ideas implied in paragraphs	2	3.59	Linear	1	288.94**
	3	4.41	Quadratic	1	5.79
	4	6.15	Cubic	1	1.16
	5	7.89	Error	104	5.41
17.2 Identifying main ideas implied in stories	2	4.59	Linear	1	128.09**
	3	5.19	Quadratic	1	1.56
	4	6.37	Cubic	1	0.67
	5	7.44	Error	104	3.11

Table A54 (Continued)

Skill	R.I.L.	Means	Source	df	Mean squares
17.5 Identifying details in stories	2	6.19	Linear	1	1434.07**
	3	7.41	Quadratic	1	35.59
	4	12.00	Cubic	1	26.67
	5	15.52	Error	104	21.99
19.1 Interpreting similes	2	6.67	Linear	1	0.22
	3	6.48	Quadratic	1	0.01
	4	6.89	Cubic	1	2.02
	5	6.67	Error	104	0.92
19.2 Interpreting idioms	2	5.00	Linear	1	16.71*
	3	5.26	Quadratic	1	10.08
	4	6.67	Cubic	1	16.71*
	5	5.70	Error	104	3.22
19.3 Interpreting hyperboles	2	5.81	Linear	1	1.67
	3	5.70	Quadratic	1	2.37
	4	6.59	Cubic	1	9.07
	5	5.89	Error	104	3.22
19.4 Interpreting personification	2	6.33	Linear	1	9.07*
	3	6.26	Quadratic	1	1.81
	4	7.41	Cubic	1	11.85*
	5	6.81	Error	104	2.15
19.5 Interpreting metaphors	2	4.52	Linear	1	38.94**
	3	4.89	Quadratic	1	0.45
	4	5.48	Cubic	1	0.05
	5	6.11	Error	104	2.45

Table A54 (Continued)

Skill	R.I.L.	Means	Source	df	Mean squares
20.1 Predicting outcomes and actions	2	6.63	Linear	1	55.42**
	3	6.78	Quadratic	1	8.90
	4	7.30	Cubic	1	0.22
	5	8.59	Error	104	4.22
20.2 Discriminating between fact and fiction	2	7.19	Linear	1	102.27**
	3	8.19	Quadratic	1	0.23
	4	9.00	Cubic	1	0.05
	5	9.81	Error	104	4.69
20.3 Discriminating between fact and opinion	2	6.52	Linear	1	5.60
	3	6.15	Quadratic	1	1.56
	4	6.85	Cubic	1	3.75
	5	6.96	Error	104	4.37

*P <.05; **P <.01

Table A55

Trends in Achievement by the Normal Group: Identifying Words at Sight

Skill	R.I.L.	Means	Source	df	Mean squares
18.1 Identifying words at sight	2	11.63	Linear	1	3275.74**
	3	17.22	Quadratic	1	9.48
	4	22.04	Cubic	1	0.19
	5	26.44	Error	104	32.02

**P <.01

Table A56

Trends in Achievement by the Superior Group:
Phonetic Analysis Skills

Skill	R.I.L.	Means	Source	df	Mean squares
10.1 Associating vowel letters and sounds	2	7.39	Linear	1	10.65**
	3	7.39	Quadratic	1	5.26
	4	7.43	Cubic	1	0.87
	5	8.39	Error	88	1.39
10.2 Associating consonant letters and sounds	2	18.22	Linear	1	5.88
	3	19.04	Quadratic	1	2.13
	4	16.78	Cubic	1	52.90**
	5	18.22	Error	88	3.92
10.3 Associating consonant digraphs and sounds	2	3.78	Linear	1	4.60*
	3	4.52	Quadratic	1	0.00
	4	3.91	Cubic	1	8.36**
	5	4.65	Error	88	0.99
10.8 Associating consonant blends and sounds	2	15.04	Linear	1	2.09
	3	16.70	Quadratic	1	3.92
	4	13.96	Cubic	1	143.58**
	5	16.33	Error	88	7.94
11.3 Using spelling patterns	2	13.65	Linear	1	1326.00**
	3	21.48	Quadratic	1	94.01
	4	21.26	Cubic	1	166.80*
	5	25.04	Error	88	28.59
13.1 Identifying syllables in orally and visually presented short words	2	--	Linear	1	8.70*
	3	14.96	Quadratic	1	2.90
	4	14.96	Cubic	1	--
	5	15.83	Error	66	1.87

Table A56 (Continued)

Skill	R.I.L.	Means	Source	df	Mean squares
12.1 Identifying syllables in visually presented short words	2	--	Linear	1	119.04**
	3	11.83	Quadratic	1	0.03
	4	13.48	Cubic	1	--
	5	15.04	Error	66	7.03
13.2 Identifying syllables in orally and visually presented long words	2	--	Linear	1	26.63
	3	12.00	Quadratic	1	102.62*
	4	10.17	Cubic	1	--
	5	13.52	Error	66	19.29
12.2 Identifying syllables in visually presented long words	2	--	Linear	1	438.35**
	3	5.22	Quadratic	1	8.38
	4	7.57	Cubic	1	--
	5	11.39	Error	66	18.80

*P <.05; **P <.01.

Table A57

Trends in Achievement by the Superior Group:
Structural Analysis Skills

Skill	R.I.L.	Means	Source	df	Mean squares
3.1 Identifying components of compounds	2	14.35	Linear	1	1062.18**
	3	19.91	Quadratic	1	90.01**
	4	22.13	Cubic	1	8.63
	5	23.74	Error	88	12.41

Table A57 (Continued)

Skill	R.I.L.	Means	Source	df	Mean squares
4.1 Identifying roots, endings, and suffixes	2	5.22	Linear	1	315.57**
	3	7.96	Quadratic	1	7.92
	4	8.87	Cubic	1	7.06
	5	10.43	Error	88	2.65
4.2 Identifying roots and prefixes	2	0.70	Linear	1	798.34**
	3	5.13	Quadratic	1	36.57**
	4	6.96	Cubic	1	8.36
	5	8.87	Error	88	4.74
4.4 Identifying roots and multiple affixes	2	1.65	Linear	1	150.37**
	3	4.91	Quadratic	1	64.45**
	4	5.39	Cubic	1	5.65
	5	5.30	Error	88	4.65
2.1 Translating contractions	2	6.61	Linear	1	206.23**
	3	9.22	Quadratic	1	21.04*
	4	10.09	Cubic	1	2.82
	5	10.78	Error	88	4.72
4.3 Locating roots by using root-change rules	2	1.87	Linear	1	1278.89**
	3	8.04	Quadratic	1	48.79*
	4	9.30	Cubic	1	54.96**
	5	12.57	Error	88	7.41
1.1 Changing roots by using root-change rules	2	0.35	Linear	1	860.09**
	3	5.52	Quadratic	1	5.75
	4	5.35	Cubic	1	108.11*
	5	9.52	Error	88	19.72

*P <.05; **P <.01.

Table A58

Trends in Achievement by the Superior Group:
Dictionary Skills

Skill	R.I.L.	Means	Source	df	Mean squares
5.1 Identifying alphabetical sequences based on first letter	2	--	Linear	1	14.70*
	3	10.87	Quadratic	1	0.72
	4	11.22	Cubic	1	--
	5	12.00	Error	66	3.37
5.2 Identifying alphabetical sequences based on third letter	2	--	Linear	1	230.63**
	3	6.70	Quadratic	1	23.54
	4	10.17	Cubic	1	--
	5	11.17	Error	66	11.02
5.3 Identifying alphabetical sequences based on first, second, or third letter	2	--	Linear	1	495.67**
	3	2.78	Quadratic	1	71.02*
	4	8.22	Cubic	1	--
	5	9.35	Error	66	16.68
6.3 Using dictionary guide words	2	--	Linear	1	1469.57**
	3	8.91	Quadratic	1	78.38
	4	12.30	Cubic	1	--
	5	20.22	Error	66	39.65
7.1 Finding definitions of single entry words	2	--	Linear	1	292.52**
	3	6.26	Quadratic	1	163.04**
	4	5.52	Cubic	1	--
	5	11.30	Error	66	14.83
7.2 Finding definitions of multiple entry words	2	--	Linear	1	570.52**
	3	6.48	Quadratic	1	84.52
	4	7.65	Cubic	1	--
	5	13.52	Error	66	25.53

Table A58 (Continued)

Skill	R.I.L.	Means	Source	df	Mean squares
8.1 Selecting definitions of single entry words	2	--	Linear	1	248.87**
	3	--	Quadratic	1	--
	4	8.30	Cubic	1	--
	5	12.96	Error	44	11.72
8.2 Selecting definitions of multiple entry words	2	--	Linear	1	176.09**
	3	--	Quadratic	1	--
	4	5.61	Cubic	1	--
	5	9.52	Error	44	7.35
9.1 Interpreting single pronunciation symbols	2	--	Linear	1	339.67**
	3	6.35	Quadratic	1	2.62
	4	8.65	Cubic	1	--
	5	11.78	Error	66	10.61
9.2 Interpreting multiple pronunciation symbols	2	--	Linear	1	29.76**
	3	0.43	Quadratic	1	0.59
	4	1.43	Cubic	1	--
	5	2.04	Error	66	2.25

*P <.05; **P <.01

Table A59

Trends in Achievement by the Superior Group:
Word Functions Skills

Skill	R.I.L.	Means	Source	df	Mean squares
14.1 Recognizing functions of nouns	2	3.61	Linear	1	240.00**
	3	5.17	Quadratic	1	0.15
	4	6.87	Cubic	1	0.19
	5	8.26	Error	88	4.79
14.2 Recognizing functions of verbs	2	2.87	Linear	1	496.70**
	3	4.52	Quadratic	1	1.09
	4	6.91	Cubic	1	1.25
	5	9.00	Error	88	6.89
14.3 Recognizing functions of adjectives	2	2.74	Linear	1	398.23**
	3	3.61	Quadratic	1	29.39*
	4	5.26	Cubic	1	0.56
	5	8.39	Error	88	4.32
14.4 Recognizing functions of adverbs	2	2.00	Linear	1	248.36**
	3	3.96	Quadratic	1	1.57
	4	5.09	Cubic	1	1.47
	5	6.52	Error	88	4.51
15.1 Specifying functions of nouns	2	2.13	Linear	1	224.00**
	3	3.78	Quadratic	1	0.88
	4	5.09	Cubic	1	0.11
	5	6.35	Error	88	4.50
15.2 Specifying functions of verbs	2	1.83	Linear	1	360.11**
	3	4.00	Quadratic	1	3.92
	4	5.78	Cubic	1	0.00
	5	7.13	Error	88	4.32

Table A59 (Continued)

Skill	R.I.L.	Means	Source	df	Mean squares
15.3 Specifying functions of adjectives	2	2.04	Linear	1	296.00**
	3	2.61	Quadratic	1	14.88
	4	4.57	Cubic	1	1.58
	5	6.74	Error	88	4.01
15.4 Specifying functions of adverbs	2	1.13	Linear	1	102.37**
	3	1.91	Quadratic	1	0.01
	4	3.13	Cubic	1	0.96
	5	3.87	Error	88	4.54

*P <.05; **P <.01

Table A60

Trends in Achievement by the Superior Group:
Comprehension Skills

Skill	R.I.L.	Means	Source	df	Mean squares
16.1 Identifying cause-effect relationships directly stated in sentences	2	6.35	Linear	1	153.82**
	3	8.96	Quadratic	1	27.17**
	4	9.57	Cubic	1	3.83
	5	10.00	Error	88	1.84
17.3 Identifying main ideas directly stated in paragraphs	2	4.65	Linear	1	236.74**
	3	6.57	Quadratic	1	5.26
	4	8.00	Cubic	1	0.00
	5	8.96	Error	88	4.27

Table A60 (Continued)

Skill	R.I.L.	Means	Source	df	Mean squares
17.1 Identifying main ideas directly stated in stories	2	3.78	Linear	1	257.25**
	3	6.61	Quadratic	1	31.70*
	4	7.87	Cubic	1	0.70
	5	8.35	Error	88	4.65
16.2 Identifying cause-effect relationships implied in sentences	2	6.22	Linear	1	184.09**
	3	9.52	Quadratic	1	32.88**
	4	9.52	Cubic	1	20.45**
	5	10.43	Error	88	2.28
17.4 Identifying main ideas implied in paragraphs	2	3.78	Linear	1	388.98**
	3	6.96	Quadratic	1	22.01
	4	8.26	Cubic	1	3.65
	5	9.48	Error	88	5.72
17.2 Identifying main ideas implied in stories	2	5.22	Linear	1	149.23**
	3	7.26	Quadratic	1	8.52
	4	7.96	Cubic	1	2.51
	5	8.78	Error	88	3.81
17.5 Identifying details in stories	2	7.43	Linear	1	1749.15**
	3	11.35	Quadratic	1	18.27
	4	16.57	Cubic	1	22.18
	5	18.70	Error	88	24.33
19.1 Interpreting similes	2	6.48	Linear	1	3.65*
	3	7.13	Quadratic	1	2.45
	4	7.09	Cubic	1	0.63
	5	7.09	Error	88	0.91

Table A60 (Continued)

Skill	R.I.L.	Means	Source	df	Mean squares
	2	5.35	Linear	1	73.60**
19.2 Interpreting idioms	3	7.30	Quadratic	1	23.00**
	4	7.87	Cubic	1	0.70
	5	7.83	Error	88	1.09
	2	5.43	Linear	1	26.30**
19.3 Interpreting hyperboles	3	7.65	Quadratic	1	34.09**
	4	7.35	Cubic	1	7.83*
	5	7.13	Error	88	1.89
	2	5.65	Linear	1	46.98**
19.4 Interpreting personification	3	7.65	Quadratic	1	28.27**
	4	7.91	Cubic	1	1.83
	5	7.70	Error	88	2.40
	2	4.91	Linear	1	54.27**
19.5 Interpreting metaphors	3	6.87	Quadratic	1	8.52*
	4	6.57	Cubic	1	12.56*
	5	7.30	Error	88	1.97
	2	7.26	Linear	1	76.83**
20.1 Predicting outcomes and actions	3	9.00	Quadratic	1	0.00
	4	8.43	Cubic	1	24.43*
	5	10.17	Error	104	3.80
	2	8.65	Linear	1	61.36**
20.2 Discriminating between fact and fiction	3	10.61	Quadratic	1	12.57
	4	10.61	Cubic	1	6.82
	5	11.09	Error	104	4.46

Table A60 (Continued)

Skill	R.I.L.	Means	Source	df	Mean squares
20.3 Discriminating between fact and opinion	2	6.65	Linear	1	85.23**
	3	8.91	Quadratic	1	7.35
	4	8.52	Cubic	1	20.03*
	5	9.65	Error	104	4.23

*P <.05; **P <.01.

Table A61

Trends in Achievement by the Superior Group: Identifying Words at Sight

Skill	R.I.L.	Means	Source	df	Mean squares
18.1 Identifying words at sight	2	10.61	Linear	1	8097.61**
	3	25.04	Quadratic	1	392.39**
	4	30.57	Cubic	1	105.22
	5	36.74	Error	88	39.26

**P <.01.

APPENDIX S

BASIC STATISTICAL DATA: INTELLECTUALLY RETARDED AND NORMAL GROUPS' ACHIEVEMENT IN THE BASAL READING SKILLS

Level of Acquisition
Rate of Acquisition

Table A62

Level of Acquisition of the Normal and Retarded Groups: Identifying Words at Sight

Skill	R.I.L.	Means		t ratio df=106	Relationship
		Normal	Retarded		
18.1 Identifying words at sight	P	14.43	14.41	0.016	N=R
	I	24.24	22.26	1.524	N=R

Table A63

Level of Acquisition of the Normal and Retarded Groups: Phonetic Analysis Skills

Skill	R.I.L.	Means		t ratio df=106[a]	Relationship
		Normal	Retarded		
10.1 Associating vowel letters and sounds	P	7.31	6.87	1.519	N=R
	I	7.43	6.96	1.478	N=R
10.2 Associating consonant letters and sounds	P	17.56	16.78	1.494	N=R
	I	17.24	16.59	1.086	N=R
10.3 Associating consonant digraphs and sounds	P	3.52	3.44	0.315	N=R
	I	3.81	3.65	0.800	N=R
10.8 Associating consonant blends and sounds	P	15.93	15.46	0.399	N=R
	I	17.37	15.65	2.420*	N>R

Table A63 (Continued)

Skill	R.I.L.	Means		t ratio df=106[a]	Relationship
		Normal	Retarded		
11.3 Using spelling patterns	P	13.81	10.78	3.481**	N>R
	I	17.50	14.06	3.143**	N>R
13.1 Identifying syllables in orally and visually presented short words	3	12.52	10.67	1.546	N=R
	I	14.32	11.93	4.231**	N>R
12.1 Identifying syllables in visually presented short words	3	9.74	9.15	0.481	N=R
	I	12.81	10.76	3.601**	N>R
13.2 Identifying syllables in orally and visually presented long words	3	7.93	2.85	4.850**	N>R
	I	8.37	3.74	5.876**	N>R
12.2 Identifying syllables in visually presented long words	3	4.07	2.33	2.526*	N>R
	I	5.59	3.46	2.947**	N>R

*P <.05, **P <.01

[a]Exception: df=52 in comparisons involving reading instructional level 3 for scores 12.1, 12.2, 13.1, and 13.2.

Table A64

Level of Acquisition of the Normal and Retarded Groups: Structural Analysis Skills

Skill	R.I.L.	Means		t ratio df=106	Relationship
		Normal	Retarded		
3.1 Identifying components of compounds	P	14.96	16.48	1.388	N=R
	I	21.52	20.91	0.864	N=R
4.1 Identifying roots, endings, and suffixes	P	5.96	5.46	1.330	N=R
	I	8.07	7.43	1.573	N=R
4:2 Identifying roots and prefixes	P	1.44	1.46	0.043	N=R
	I	6.19	3.41	4.441**	N>R
4.4 Identifying roots and multiple affixes	P	2.54	2.76	0.614	N=R
	I	5.28	3.85	3.436**	N>R
2.1 Translating contractions	P	5.11	4.19	1.541	N=R
	I	8.78	6.52	4.274**	N>R
4.3 Locating roots by using root-change rules	P	3.69	3.22	0.863	N=R
	I	8.72	5.57	4.300**	N>R
1.1 Changing roots by using root-change rules	P	1.26	1.24	0.062	N=R
	I	4.81	2.54	4.057**	N>R

**P <.01

Table A65

Level of Acquisition of the Normal and Retarded Groups: Dictionary Skills

Skill	R.I.L.	Means		t ratio df=106[a]	Relationship
		Normal	Retarded		
5.1 Identifying alphabetical sequences based on first letter	3	8.44	6.93	1.616	N=R
	I	10.61	9.19	2.366*	N>R
5.2 Identifying alphabetical sequences based on third letter	3	3.11	3.85	0.806	N=R
	I	8.61	6.52	2.923**	N>R
5.3 Identifying alphabetical sequences based on first, second, or third letter	3	1.67	2.44	1.033	N=R
	I	5.74	5.52	0.251	N=R
6.3 Using dictionary guide words	3	6.74	5.59	0.858	N=R
	I	13.07	8.98	3.431**	N>R
7.1 Finding definitions of single entry words	3	3.04	3.37	0.470	N=R
	I	7.02	5.26	2.309*	N>R
7.2 Finding definitions of multiple entry words	3	2.85	3.56	0.879	N=R
	I	8.33	6.17	2.208*	N>R
8.1 Selecting definitions of single entry words	P	--	--	--	--
	I	7.00	6.06	1.247	N=R

Table A65 (Continued)

Skill	R.I.L.	Means		t ratio df=106[a]	Relationship
		Normal	Retarded		
8.2 Selecting definitions of multiple entry words	P	--	--	--	--
	I	5.20	3.96	2.319*	N>R
9.1 Interpreting single pronunciation symbols	3	4.59	4.48	0.147	N=R
	I	7.61	5.13	4.476**	N>R
9.2 Interpreting multiple pronunciation symbols	3	0.70	1.63	2.300*	N<R
	I	1.76	1.83	0.237	N=R

*P <.05, **P <.01

[a]Exception: df=52 in comparisons involving reading instructional level 3 for all scores.

Table A66

Level of Acquisition of the Normal and Retarded Groups: Word Functions Skills

Skill	R.I.L.	Means		t ratio df=106	Relationship
		Normal	Retarded		
14.1 Recognizing functions of nouns	P	3.41	3.02	0.948	N=R
	I	5.83	5.17	1.362	N=R
14.2 Recognizing functions of verbs	P	2.57	2.54	0.103	N=R
	I	5.56	4.57	1.969	N=R

Table A66 (Continued)

Skill	R.I.L.	Means		t ratio df=106	Relationship
		Normal	Retarded		
14.3 Recognizing functions of adjectives	P	2.35	2.44	0.308	N=R
	I	4.44	4.31	0.273	N=R
14.4 Recognizing functions of adverbs	P	2.28	2.20	0.252	N=R
	I	3.81	3.50	0.739	N=R
15.1 Specifying functions of nouns	P	2.59	2.41	0.517	N=R
	I	3.78	3.65	0.279	N=R
15.2 Specifying functions of verbs	P	2.48	2.43	0.182	N=R
	I	4.52	3.70	1.829	N=R
15.3 Specifying functions of adjectives	P	2.24	1.87	1.168	N=R
	I	3.56	3.57	0.046	N=R
15.4 Specifying functions of adverbs	P	2.30	2.06	0.793	N=R
	I	2.35	2.74	1.067	N=R

Table A67

Level of Acquisition of the Normal and Retarded Groups: Comprehension Skills

Skill	R.I.L.	Means		t ratio df=106	Relationship
		Normal	Retarded		
16.1 Identifying cause-effect relationships directly stated in sentences	P	7.00	6.57	1.224	N=R
	I	9.13	8.78	1.273	N=R
17.3 Identifying main ideas directly stated in paragraphs	P	4.52	4.09	1.068	N=R
	I	6.91	6.09	2.277*	N>R
17.1 Identifying main ideas directly stated in stories	P	4.00	3.30	1.774	N=R
	I	6.26	4.91	3.470**	N>R
16.2 Identifying cause-effect relationships implied in sentences	P	6.87	6.37	1.362	N=R
	I	9.15	8.54	1.976*	N>R
17.4 Identifying main ideas implied in paragraphs	P	4.00	3.78	0.512	N=R
	I	7.02	5.65	2.962**	N>R
17.2 Identifying main ideas implied in stories	P	4.89	4.31	1.543	N=R
	I	6.91	6.80	0.282	N=R
17.5 Identifying details in stories	P	6.80	7.63	0.977	N=R
	I	13.76	11.07	2.835**	N>R

Table A67 (Continued)

Skill	R.I.L.	Means Normal	Means Retarded	t ratio df=106	Relationship
19.1 Interpreting similes	P	6.57	5.39	4.097**	N>R
	I	6.78	6.06	3.364**	N>R
19.2 Interpreting idioms	P	5.13	3.80	3.620**	N>R
	I	6.19	5.09	2.887**	N>R
19.3 Interpreting hyperboles	P	5.76	4.93	2.199*	N>R
	I	6.24	4.94	3.643**	N>R
19.4 Interpreting personification	P	6.30	4.46	4.487**	N>R
	I	7.11	5.94	3.829**	N>R
19.5 Interpreting metaphors	P	4.70	3.39	3.601**	N>R
	I	5.80	5.19	1.899	N=R

*P <.05, **P <.01

Table A68

Rate of Acquisition of the Normal and Retarded Groups: Phonetic Analysis Skills

A. Means

Basal reading skill	R.I.L.	Normal group		Retarded group	
		Fall	Spring	Fall	Spring
10.1 Associating vowel letters and sounds	P	7.31	7.63	6.87	7.48
	I	7.43	7.83	6.96	7.30
10.2 Associating consonant letters and sounds	P	17.56	18.41	16.78	17.31
	I	17.24	18.41	16.59	17.87
10.3 Associating consonant digraphs and sounds	P	3.52	4.07	3.44	3.72
	I	3.81	4.35	3.65	3.81
10.8 Associating consonant blends and sounds	P	15.93	17.91	15.46	16.37
	I	17.37	18.67	14.65	17.04
11.3 Using spelling patterns	P	13.81	19.85	10.78	13.87
	I	17.50	20.98	14.06	16.80
13.1 Identifying syllables in orally and visually presented short words	3	12.52	13.81	10.67	12.56
	I	14.32	15.04	11.93	13.28
12.1 Identifying syllables in visually presented short words	3	9.74	12.15	9.15	9.89
	I	12.81	13.48	10.76	11.50
13.2 Identifying syllables in orally and visually presented long words	3	7.93	9.93	2.85	5.59
	I	8.37	11.13	3.74	5.85
12.2 Identifying syllables in visually presented long words	3	4.07	6.07	2.33	2.93
	I	5.59	7.33	3.46	4.09

Table A68 (Continued)

B. Results of Analyses of Variance

Basal reading skill	R.I.L.	Mean squares[a] Groups df=1	Error(b) df=106	Time df=1	TxG df=1	Error(w) df=106
10.1 Associating vowel letters and sounds	P	4.74	3.17	11.57**	1.19	1.10
	I	13.50*	2.48	7.41*	0.07	1.40
10.2 Associating consonant letters and sounds	P	47.23*	9.11	26.04**	1.34	2.87
	I	18.96	6.71	80.67**	0.17	5.52
10.3 Associating consonant digraphs and sounds	P	2.45	1.75	9.37**	1.04	0.94
	I	6.69*	1.20	6.69**	1.85	0.71
10.8 Associating consonant blends and sounds	P	54.00	22.08	112.67**	15.57	8.02
	I	151.67**	15.01	97.34**	0.12	6.87
11.3 Using spelling patterns	P	1098.00**	34.66	1125.23**	117.04*	24.27
	I	785.85**	58.38	522.67**	7.41	14.04
13.1 Identifying syllables in orally and visually presented short words	3	65.33	25.89	68.48**	2.37	7.60
	I	232.30**	10.74	58.07**	5.35	4.03
12.1 Identifying syllables in visually presented short words	3	54.90	25.98	66.90*	18.75	10.00
	I	220.02**	11.92	26.74*	0.07	3.99
13.2 Identifying syllables in orally and visually presented long words	3	597.37**	26.67	151.70**	3.70	8.59
	I	1325.12**	29.17	320.23**	5.67	6.92

Table A68 (Continued)

Basal reading skill	R.I.L.	Mean squares[a] Groups df=1	Error(b) df=106	Time df=1	TxG df=1	Error(w) df=106
12.2 Identifying syllables in visually presented long words	3	161.33**	13.26	45.37*	13.37	7.54
	I	389.35**	25.24	75.85**	16.67	6.20

*P of F <.05; **P of F <.01.

[a]df=52 for Error (b) and for Error (w) for comparisons involving reading instructional level 3 for scores 12.1, 12.2, 13.1, 13.2.

Table A69

Rate of Acquisition of the Normal and Retarded Groups: Structural Analysis Skills

A. Means

Basal reading skill	R.I.L.	Normal group Fall	Normal group Spring	Retarded group Fall	Retarded group Spring
3.1 Identifying components of compounds	P	14.96	21.70	16.48	20.85
	I	21.52	23.61	20.91	21.57
4.1 Identifying roots, endings, and suffixes	P	5.96	7.78	5.46	6.59
	I	8.07	9.63	7.43	7.91
4.2 Identifying roots and prefixes	P	1.44	5.31	1.46	3.76
	I	6.19	7.98	3.41	5.93
4.4 Identifying roots and multiple affixes	P	2.54	5.91	2.76	4.41
	I	5.28	6.59	3.85	5.46
2.1 Translating contractions	P	5.11	9.07	4.19	5.85
	I	8.78	9.83	6.52	7.94

Table A69 (Continued)

Basal reading skill	R.I.L.	Normal group		Retarded group	
		Fall	Spring	Fall	Spring
4.3 Locating roots by using root-change rules	P	3.69	8.78	3.22	5.13
	I	8.72	11.24	5.57	7.17
1.1 Changing roots by using root-change rules	P	1.26	5.80	1.24	2.78
	I	4.81	7.76	2.54	4.65

B. Results of Analyses of Variance

Basal reading skill	R.I.L.	Mean squares				
		Groups df=1	Error(b) df=106	Time df=1	TxG df=1	Error(w) df=106
3.1 Identifying components of compounds	P	6.00	31.98	1666.67**	75.85**	11.32
	I	94.67*	14.18	102.78**	27.45**	6.99
4.1 Identifying roots, endings, and suffixes	P	38.34*	5.68	117.04**	6.34*	2.23
	I	75.85**	5.51	56.02**	15.57*	2.87
4.2 Identifying roots and prefixes	P	31.89	9.32	513.37**	33.45**	3.44
	I	315.38**	12.58	251.34**	7.04	3.85
4.4 Identifying roots and multiple affixes	P	22.04	6.13	340.00**	40.04**	2.26
	I	88.17**	5.73	115.57**	1.18	2.60
2.1 Translating contractions	P	232.30**	14.61	427.85**	71.19**	3.82
	I	232.30**	9.54	83.13**	1.85	2.17
4.3 Locating roots by using root-change rules	P	228.17**	15.05	661.50**	190.96**	5.18
	I	704.17**	23.60	228.17**	11.57	3.36
1.1 Changing roots by using root-change rules	P	124.52**	8.37	498.07**	121.50**	5.11
	I	392.04**	18.32	345.04**	9.38	2.96

*P of F <.05; **P of F <.01.

Table A70

Rate of Acquisition of the Normal and Retarded Groups: Dictionary Skills

A. Means

Basal reading skill	R.I.L.	Normal group		Retarded group	
		Fall	Spring	Fall	Spring
5.1 Identifying alphabetical sequences based on first letter	3	8.44	10.63	6.93	7.89
	I	10.61	11.54	9.19	9.76
5.2 Identifying alphabetical sequences based on third letter	3	3.11	8.33	3.85	6.22
	I	8.61	10.07	6.52	8.07
5.3 Identifying alphabetical sequences based on first, second, or third letter	3	1.67	4.07	2.44	3.48
	I	5.74	9.17	5.52	6.15
6.3 Using dictionary guide words	3	6.74	11.59	5.59	8.63
	I	13.07	17.61	8.98	12.96
7.1 Finding definitions of single entry words	3	3.04	6.04	3.37	5.44
	I	7.02	8.72	5.26	6.85
7.2 Finding definitions of multiple entry words	3	2.85	6.63	3.56	6.48
	I	8.33	12.06	6.17	8.00
8.1 Selecting definitions of single entry words	P	--	--	--	--
	I	7.00	9.85	6.06	7.80
8.2 Selecting definitions of multiple entry words	P	--	--	--	--
	I	5.20	8.00	3.96	5.00
9.1 Interpreting single pronunciation symbols	3	4.59	8.81	4.48	4.85
	I	7.61	9.07	5.13	6.22
9.2 Interpreting multiple pronunciation symbols	3	0.70	2.00	1.63	1.85
	I	1.76	2.20	1.83	2.19

Table A70 (Continued)

B. Results of Analyses of Variance

Basal reading skill	R.I.L.	Mean squares[a] Group df=1	Error(b) df=106	Time df=1	TxG df=1	Error(w) df=106
5.1 Identifying alphabetical sequences based on first letter	3	122.45*	20.94	66.90**	10.08	3.51
	I	138.56**	11.47	30.37*	1.67	4.83
5.2 Identifying alphabetical sequences based on third letter	3	12.68	17.77	389.12**	54.90*	8.66
	I	226.12**	21.04	123.00**	0.12	4.90
5.3 Identifying alphabetical sequences based on first, second, or third letter	3	0.23	18.03	80.08**	12.68	5.65
	I	141.78*	30.44	222.04**	105.56**	9.06
6.3 Using dictionary guide words	3	114.08	32.68	420.08**	22.23	29.18
	I	1031.41**	70.30	979.63**	4.17	20.07
7.1 Finding definitions of single entry words	3	0.45	10.23	173.79**	5.79	7.21
	I	177.85**	22.08	146.69**	0.17	10.94
7.2 Finding definitions of multiple entry words	3	2.08	16.40	303.34**	4.90	7.04
	I	522.67**	36.30	416.67**	48.17*	9.85
8.1 Selecting definitions of single entry words	P	--	--	--	--	--
	I	121.50*	24.05	284.74**	16.67	9.72
8.2 Selecting definitions of multiple entry words	P	--	--	--	--	--
	I	242.78**	12.92	198.38**	41.78**	3.82
9.1 Interpreting single pronunciation symbols	3	112.04**	9.49	142.37**	100.15**	7.61
	I	384.00**	14.86	88.17**	1.85	5.67

Table A70 (Continued)

Basal reading skill	R.I.L.	Mean squares[a] Group df=1	Error(b) df=106	Time df=1	TxG df=1	Error(w) df=106
9.2 Interpreting multiple pronunciation symbols	3	4.08	2.83	15.56**	7.79*	1.81
	I	0.04	2.83	8.56	0.12	2.91

*P of F <.05; **P of F <.01.

[a]df=52 for Error (b) and for Error (w) for comparisons involving reading instructional level 3 for all scores.

Table A71

Rate of Acquisition of the Normal and Retarded Groups: Word Functions Skills

A. Means

Basal reading skill	R.I.L.	Normal group Fall	Normal group Spring	Retarded group Fall	Retarded group Spring
14.1 Recognizing functions of nouns	P	3.41	5.06	3.02	3.17
	I	5.83	7.43	5.17	5.76
14.2 Recognizing functions of verbs	P	2.57	4.37	2.54	3.02
	I	5.56	7.04	4.57	4.69
14.3 Recognizing functions of adjectives	P	2.35	4.35	2.44	3.24
	I	4.44	6.04	4.31	4.46
14.4 Recognizing functions of adverbs	P	2.28	3.67	2.20	2.76
	I	3.81	5.33	3.50	3.80

Table A71 (Continued)

Basal reading skill	R.I.L.	Normal group		Retarded group	
		Fall	Spring	Fall	Spring
15.1 Specifying functions of nouns	P	2.59	3.63	2.41	2.78
	I	3.78	4.69	3.65	3.78
15.2 Specifying functions of verbs	P	2.48	3.61	2.43	3.02
	I	4.52	5.06	3.70	3.81
15.3 Specifying functions of adjectives	P	2.24	3.46	1.87	2.69
	I	3.56	4.54	3.57	3.72
15.4 Specifying functions of adverbs	P	2.30	2.44	2.06	2.59
	I	2.35	3.07	2.74	2.76

B. Results of Analyses of Variance

Basal reading skill	R.I.L.	Mean squares				
		Groups df=1	Error(b) df=106	Time df=1	TxG df=1	Error(w) df=106
14.1 Recognizing functions of nouns	P	70.04**	5.78	43.56**	30.37**	3.98
	I	73.50**	10.60	64.46**	13.50	4.06
14.2 Recognizing functions of verbs	P	26.04*	5.03	70.04**	23.34**	2.80
	I	150.00**	12.18	34.24**	25.35*	3.84
14.3 Recognizing functions of adjectives	P	14.00	3.58	105.56**	19.56*	3.10
	I	39.19*	9.58	40.91**	28.17**	3.01
14.4 Recognizing functions of adverbs	P	13.00	3.32	51.04**	9.38	2.92
	I	46.30*	9.98	44.46**	20.17**	2.48

Table A71 (Continued)

Basal reading skill	R.I.L.	Mean squares: Groups df=1	Error(b) df=106	Time df=1	TxG df=1	Error(w) df=106
15.1 Specifying functions of nouns	P	14.52*	3.10	26.74**	6.00	3.80
	I	14.52	7.95	14.52*	8.17	4.38
15.2 Specifying functions of verbs	P	5.67	3.01	40.04**	3.89	2.84
	I	57.04*	9.35	5.67	2.45	3.25
15.3 Specifying functions of adjectives	P	17.80*	3.75	56.02**	2.24	2.53
	I	8.56	7.94	17.23*	9.37	3.69
15.4 Specifying functions of adverbs	P	0.12	3.41	6.34	2.04	1.61
	I	0.07	5.34	7.41	6.69	2.58

*P of F <.05; **P of F <.01.

Table A72

Rate of Acquisition of the Normal and Retarded Groups: Comprehension Skills

A. Means

Basal reading skill	R.I.L.	Normal group: Fall	Normal group: Spring	Retarded group: Fall	Retarded group: Spring
16.1 Identifying cause-effect relationships directly stated in sentences	P	7.00	8.61	6.57	7.41
	I	9.13	9.48	8.78	8.72
17.3 Identifying main ideas directly stated in paragraphs	P	4.52	6.26	4.09	4.91
	I	6.91	7.69	6.09	6.63
17.1 Identifying main ideas directly stated in stories	P	4.00	5.43	3.30	4.06
	I	6.26	7.43	4.91	5.44

Table A72 (Continued)

Basal reading skill	R.I.L.	Normal group		Retarded group	
		Fall	Spring	Fall	Spring
16.2 Identifying cause-effect relationships implied in sentences	P	6.87	8.46	6.37	7.28
	I	9.15	9.63	8.54	9.19
17.4 Identifying main ideas implied in paragraphs	P	4.00	6.11	3.78	4.46
	I	7.02	8.35	5.65	6.59
17.2 Identifying main ideas implied in stories	P	4.89	6.74	4.31	5.06
	I	6.91	8.04	6.80	6.98
17.5 Identifying details in stories	P	6.80	12.72	7.63	9.00
	I	13.76	17.22	11.07	13.65

B. Results of Analyses of Variance

Basal reading skill	R.I.L.	Mean squares				
		Groups df=1	Error(b) df=106	Time df=1	TxG df=1	Error(w) df=106
16.1 Identifying cause-effect relationships directly stated in sentences	P	35.85**	4.09	80.67**	8.17*	1.92
	I	16.67*	2.78	1.19	2.24	1.58
17.3 Identifying main ideas directly stated in paragraphs	P	42.67**	5.36	88.17**	11.57*	2.59
	I	47.23**	4.54	23.34**	0.78	2.40
17.1 Identifying main ideas directly stated in stories	P	58.07**	4.93	64.46**	6.00	3.10
	I	150.00**	6.81	39.19**	5.35	2.20

Table A72 (Continued)

Basal reading skill	R.I.L.	Mean squares				
		Groups df=1	Error(b) df=106	Time df=1	TxG df=1	Error(w) df=106
16.2 Identifying cause-effect relationships implied in sentences	P	38.34**	4.92	84.38**	6.34	1.94
	I	15.04	4.04	17.23**	0.37	1.48
17.4 Identifying main ideas implied in paragraphs	P	47.23**	6.52	105.56**	27.45*	4.08
	I	132.23**	9.08	70.04**	2.04	2.42
17.2 Identifying main ideas implied in stories	P	68.91**	5.42	90.74**	16.67**	2.22
	I	18.38	5.69	23.34**	12.04*	2.27
17.5 Identifying details in stories	P	112.67*	27.31	718.69**	280.17**	11.26
	I	528.91**	3.58	492.02**	10.67	10.81

*P of F <.05; **P of F <.01

APPENDIX T

BASIC STATISTICAL DATA:
INTELLECTUALLY NORMAL AND SUPERIOR GROUPS' ACHIEVEMENT IN THE BASAL READING SKILLS

Level of Acquisition
Rate of Acquisition

Table A73

Level of Acquisition of the Normal and Superior Groups: Identifying Words at Sight

Skill	R.I.L.	Means		t ratio df=98	Relationship
		Normal	Superior		
18.1 Identifying words at sight	P	14.43	17.83	2.205*	N<S
	I	24.24	33.65	7.637**	N<S

*P <.05; **P <.01.

Table A74

Level of Acquisition of the Normal and Superior Groups: Phonetic Analysis Skills

Skill	R.I.L.	Means		t ratio df=98[a]	Relationship
		Normal	Superior		
10.1 Associating vowel letters and sounds	P	7.31	7.39	0.308	N=S
	I	7.43	7.91	1.766	N=S
10.2 Associating consonant letters and sounds	P	17.56	18.63	2.809**	N<S
	I	17.24	17.50	0.505	N=S
10.3 Associating consonant digraphs and sounds	P	3.52	4.15	2.914**	N<S
	I	3.81	4.28	2.200*	N<S
10.8 Associating consonant blends and sounds	P	15.93	18.63	3.846**	N<S
	I	17.37	17.78	0.610	N=S

Table A74 (Continued)

Skill	R.I.L.	Means		t ratio df=98[a]	Relationship
		Normal	Superior		
11.3 Using spelling patterns	P	13.81	17.57	3.235**	N<S
	I	17.50	23.15	4.878**	N<S
13.1 Identifying syllables in orally and visually presented short words	3	12.52	14.96	2.846**	N<S
	I	14.31	15.39	3.150**	N<S
12.1 Identifying syllables in visually presented short words	3	9.74	11.83	1.874	N=S
	I	12.81	14.26	3.350**	N<S
13.2 Identifying syllables in orally and visually presented long words	3	7.93	12.00	3.433**	N<S
	I	8.37	11.85	3.481**	N<S
12.2 Identifying syllables in visually presented long words	3	4.07	5.22	1.218	N=S
	I	5.59	9.48	4.402**	N<S

*P <.05; **P <.01

[a]Exception: df=48 in comparisons involving reading instructional level 3 for scores 12.1, 12.2, 13.1 and 13.2.

Table A75

Level of Acquisition of the Normal and Superior Groups: Structural Analysis Skills

Skill	R.I.L.	Means		t ratio df=98	Relationship
		Normal	Superior		
3.1 Identifying components of compounds	P	14.96	17.13	2.072*	N<S
	I	21.52	22.93	2.574*	N<S
4.1 Identifying roots, endings, and suffixes	P	5.96	6.59	1.797	N=S
	I	8.07	9.65	3.949**	N<S
4.2 Identifying roots and prefixes	P	1.44	2.91	2.622*	N<S
	I	6.19	7.91	3.411**	N<S
4.4 Identifying roots and multiple affixes	P	2.54	3.28	1.795	N=S
	I	5.28	5.35	0.151	N=S
2.1 Translating contractions	P	5.11	7.91	4.972**	N<S
	I	8.78	10.43	4.105**	N<S
4.3 Locating roots by using root-change rules	P	3.69	4.96	1.822	N=S
	I	8.72	10.93	1.837	N=S
1.1 Changing roots by using root-change rules	P	1.26	2.93	1.792	N=S
	I	4.81	7.43	3.962**	N<S

*P <.05, **P <.01

Table A76

Level of Acquisition of the Normal and Superior Groups: Dictionary Skills

Skill	R.I.L.	Means		t ratio[a] df=98	Relationship
		Normal	Superior		
5.1 Identifying alphabetical sequences based on first letter	3	8.44	10.87	3.149**	N<S
	I	10.61	11.61	2.824**	N<S
5.2 Identifying alphabetical sequences based on third letter	3	3.11	6.70	3.348**	N<S
	I	8.61	10.67	3.588**	N<S
5.3 Identifying alphabetical sequences based on first, second, or third letter	3	1.67	2.78	1.142	N=S
	I	5.74	8.78	3.659**	N<S
6.3 Using dictionary guide words	3	6.74	8.91	1.624	N=S
	I	13.07	16.26	2.138*	N<S
7.1 Finding definitions of single entry words	3	3.04	6.26	3.730**	N<S
	I	7.02	8.41	1.529	N=S
7.2 Finding definitions of multiple entry words	3	2.85	6.48	3.173**	N<S
	I	8.33	10.59	1.960	N=S
8.1 Selecting definitions of single entry words	P	--	--	--	--
	I	7.00	10.63	4.572**	N<S

Table A76 (Continued)

Skill	R.I.L.	Means		t ratio df=98[a]	Relationship
		Normal	Superior		
8.2 Selecting definitions of multiple entry words	P	--	--	--	--
	I	5.20	7.57	3.878**	N<S
9.1 Interpreting single pronunciation symbols	3	4.59	6.35	2.393*	N<S
	I	7.61	10.22	3.789**	N<S
9.2 Interpreting multiple pronunciation symbols	3	0.70	0.43	0.901	N=S
	I	1.76	1.74	0.062	N=S

*P <.05, **P <.01.

[a]Exception: df=48 for comparisons involving reading instructional level 3 for all scores.

Table A77

Level of Acquisition of the Normal and Superior Groups: Word Functions Skills

Skill	R.I.L.	Means		t ratio df=98	Relationship
		Normal	Superior		
14.1 Recognizing functions of nouns	P	3.41	4.39	2.470*	N<S
	I	5.83	7.57	3.497**	N<S
14.2 Recognizing functions of verbs	P	2.57	3.70	2.619*	N<S
	I	5.56	7.96	4.191**	N<S

Table A77 (Continued)

Skill	R.I.L.	Means		t ratio df=98	Relationship
		Normal	Superior		
14.3 Recognizing functions of adjectives	P	2.35	3.17	2.281*	N<S
	I	4.44	6.83	4.740**	N<S
14.4 Recognizing functions of adverbs	P	2.28	2.98	1.980*	N<S
	I	3.81	5.80	4.316**	N<S
15.1 Specifying functions of nouns	P	2.59	2.96	1.033	N=S
	I	3.78	5.72	4.151**	N<S
15.2 Specifying functions of verbs	P	2.48	2.91	1.258	N=S
	I	4.52	6.46	3.996**	N<S
15.3 Specifying functions of adjectives	P	2.24	2.33	0.256	N=S
	I	3.56	5.65	4.732**	N<S
15.4 Specifying functions of adverbs	P	2.30	1.52	2.551*	N<S
	I	2.35	3.50	2.690**	N<S

*P <.05, **P <.01.

Table A78

Level of Acquisition of the Normal and Superior Groups: Comprehension Skills

Skill	R.I.L.	Means		t ratio df=98	Relationship
		Normal	Superior		
16.1 Identifying cause-effect relationships directly stated in sentences	P	7.00	7.65	1.753	N=S
	I	9.13	9.78	2.651**	N<S
17.3 Identifying main ideas directly stated in paragraphs	P	4.52	5.61	2.456*	N<S
	I	6.91	8.48	4.487**	N<S
17.1 Identifying main ideas directly stated in stories	P	4.00	5.20	2.354*	N<S
	I	6.26	8.11	5.105**	N<S
16.2 Identifying cause-effect relationships implied in sentences	P	6.87	7.87	2.321*	N<S
	I	9.15	9.98	3.015**	N<S
17.4 Identifying main ideas implied in paragraphs	P	4.00	5.37	2.504*	N<S
	I	7.02	8.87	4.112**	N<S
17.2 Identifying main ideas implied in stories	P	4.89	6.24	3.229**	N<S
	I	6.91	8.37	4.160**	N<S
17.5 Identifying details in stories	P	6.80	9.39	2.401*	N<S
	I	13.76	17.63	4.445**	N<S

Table A78 (Continued)

Skill	R.I.L.	Means		t ratio	Relation-
		Normal	Superior	df=98	ship
19.1 Interpreting similes	P	6.57	6.80	1.036	N=S
	I	6.78	7.09	1.956	N=S
19.2 Interpreting idioms	P	5.13	6.33	3.204**	N<S
	I	6.19	7.85	6.751**	N<S
19.3 Interpreting hyperboles	P	5.76	6.54	1.968	N=S
	I	6.24	7.24	3.694**	N<S
19.4 Interpreting personification	P	6.30	6.65	0.888	N=S
	I	7.11	7.80	3.524**	N<S
19.5 Interpreting metaphors	P	4.70	5.89	3.249**	N<S
	I	5.80	6.93	4.452**	N<S

*P <.05; **P <.01.

Table A79

Rate of Acquisition of the Normal and Superior Groups: Phonetic Analysis Skills

A. Means

Basal reading skill	R.I.L.	Normal group		Superior group	
		Fall	Spring	Fall	Spring
10.1 Associating vowel letters and sounds	P	7.31	7.63	7.39	7.41
	I	7.43	7.83	7.91	7.72
10.2 Associating consonant letters and sounds	P	17.56	18.41	18.63	19.04
	I	17.24	18.41	17.50	17.87
10.3 Associating consonant digraphs and sounds	P	3.52	4.07	4.15	4.13
	I	3.81	4.35	4.28	4.54
10.8 Associating consonant blends and soumds	P	15.93	17.91	18.63	19.46
	I	17.37	18.67	17.78	18.26
11.3 Using spelling patterns	P	13.81	19.85	17.57	21.91
	I	17.50	20.98	23.15	25.00
13.1 Identifying syllables in orally and visually presented short words	3	12.52	13.81	14.96	15.39
	I	14.31	15.04	15.39	15.54
12.1 Identifying syllables in visually presented short words	3	9.74	12.15	11.83	13.26
	I	12.81	13.48	14.26	14.59
13.2 Identifying syllables in orally and visually presented long words	3	7.93	9.93	12.00	14.04
	I	8.37	11.13	11.85	13.35
12.2 Identifying syllables in visually presented long words	3	4.07	6.07	5.22	10.52
	I	5.59	7.33	9.48	11.07

Table A79 (Continued)

B. Results of Analyses of Variance

Basal reading skill	R.I.L.	Mean squares[a] Groups df=1	Error(b) df=98	Time df=1	TxG df=1	Error(w) df=98
10.1 Associating vowel letters and sounds	P	0.24	2.54	1.62	1.07	1.07
	I	1.71	2.33	0.85	4.52	1.17
10.2 Associating consonant letters and sounds	P	36.36**	3.50	21.13**	2.39	2.10
	I	0.96	4.59	32.00*	7.89	5.82
10.3 Associating consonant digraphs and sounds	P	5.91*	1.32	4.21*	4.14*	0.93
	I	5.40*	1.13	8.41**	0.95	0.92
10.8 Associating consonant blends and sounds	P	224.72**	12.59	105.13**	16.58	7.42
	I	0.00	11.52	42.32*	8.31	7.00
11.3 Using spelling patterns	P	419.48**	56.36	1383.38**	35.44	18.41
	I	1161.55**	50.26	372.65**	33.15	13.74
13.1 Identifying syllables in orally and visually presented short words	3	100.08**	12.14	20.25	4.61	5.43
	I	31.12**	3.72	10.58*	4.04	1.89
12.1 Identifying syllables in visually presented short words	3	63.51	19.44	96.04**	5.88	9.11
	I	80.86**	6.56	13.01**	1.44	1.75
13.2 Identifying syllables in orally and visually presented long words	3	416.71**	23.50	102.01**	0.01	9.01
	I	402.91**	31.71	237.62**	19.69	6.38
12.2 Identifying syllables in visually presented long words	3	194.12**	20.69	309.76**	67.81**	8.51
	I	720.70**	35.08	139.45**	0.29	6.32

*P of F <.05; **P of F <.01.

[a]df=48 for Error (b) and for Error (w) for comparisons involving reading instructional level 3 for scores 12.1, 12.2, 13.1, and 13.2.

Table A80

Rate of Acquisition of the Normal and Superior Groups: Structural Analysis Skills

A. Means

Basal reading skill	R.I.L.	Normal group		Superior group	
		Fall	Spring	Fall	Spring
3.1 Identifying components of compounds	P	14.96	21.70	17.13	21.02
	I	21.52	23.61	22.93	23.54
4.1 Identifying roots, endings and suffixes	P	5.96	7.78	6.59	8.04
	I	8.07	9.63	9.65	10.43
4.2 Identifying roots and prefixes	P	1.44	5.31	2.91	6.46
	I	6.19	7.98	7.91	9.02
4.4 Identifying roots and multiple affixes	P	2.54	5.91	3.28	5.30
	I	5.28	6.59	5.35	6.72
2.1 Translating contractions	P	5.11	9.07	7.91	9.98
	I	8.78	9.83	10.43	10.91
4.3 Locating roots by using root-change rules	P	3.69	8.78	4.96	9.70
	I	8.72	11.24	10.93	12.28
1.1 Changing roots by using root-change rules	P	1.26	5.80	2.93	8.04
	I	4.81	7.76	7.43	9.61

B. Results of Analyses of Variance

Basal reading skill	R.I.L.	Mean squares				
		Groups	Error(b)	Time	TxG	Error(w)
		df=1	df=98	df=1	df=1	df=98
3.1 Identifying components of compounds	P	27.41	30.21	1474.25**	100.84**	10.09
	I	22.59*	5.66	99.41**	27.35*	4.34

Table A80 (Continued)

Basal reading skill	R.I.L.	Mean squares				
		Groups	Error(b)	Time	TxG	Error(w)
		df=1	df=98	df=1	df=1	df=98
4.1 Identifying roots, endings, and suffixes	P	9.83	5.31	136.13**	1.59	1.41
	I	70.54**	5.40	72.00**	7.42	1.94
4.2 Identifying roots and prefixes	P	84.63*	13.14	691.92**	1.33	3.03*
	I	95.17**	6.68	109.52**	5.87	2.89
4.4 Identifying roots and multiple affixes	P	0.25	6.84	378.13**	22.59**	1.99
	I	0.47	5.47	89.78**	0.04	2.89
2.1 Translating Contractions	P	170.59**	10.08	477.41**	44.73**	2.59
	I	93.02**	4.40	31.21**	4.14	1.65
4.3 Locating roots by using root-change rules	P	59.52	18.83	1215.25**	1.55	5.87
	I	131.54**	17.76	196.02**	17.02*	2.47
1.1 Changing roots by using root-change rules	P	191.11	74.67	1152.00**	4.06	11.67
	I	248.10**	19.32	335.41**	7.37	3.11

*P of F <.05; **P of F <.01.

Table A81

Rate of Acquisition of the Normal and Superior Groups: Dictionary Skills

A Means

Basal reading skill	R.I.L.	Normal group		Superior group	
		Fall	Spring	Fall	Spring
5.1 Identifying alphabetical sequences based on first letter	3	8.44	10.63	10.87	11.52
	I	10.61	11.54	11.61	11.37

Table A81 (Continued)

Basal reading skill	R.I.L.	Normal group Fall	Normal group Spring	Superior group Fall	Superior group Spring
5.2 Identifying alphabetical sequences based on third letter	3	3.11	8.33	6.70	10.43
	I	8.61	10.07	10.67	10.80
5.3 Identifying alphabetical sequences based on first, second, or third letter	3	1.67	4.07	2.78	7.74
	I	5.74	9.17	8.78	10.89
6.3 Using dictionary guide words	3	6.74	11.59	8.91	17.52
	I	13.07	17.61	16.26	22.85
7.1 Finding definitions of single entry words	3	3.04	6.04	6.26	8.91
	I	7.02	8.72	8.41	9.39
7.2 Finding definitions of multiple entry words	3	2.85	6.63	6.48	11.00
	I	8.33	12.06	10.59	13.39
8.1 Selecting definitions of single entry words	P	--	--	--	--
	I	7.00	9.85	10.63	11.65
8.2 Selecting definitions of multiple entry words	P	--	--	--	--
	I	5.20	8.00	7.57	9.63
9.1 Interpreting single pronunciation symbols	3	4.59	8.81	6.35	11.00
	I	7.61	9.07	10.22	11.72
9.2 Interpreting multiple pronunciation symbols	3	0.70	2.00	0.43	1.52
	I	1.76	2.20	1.74	3.52

Table A81 (Continued)

B. Results of Analyses of Variance

Basal reading skill	R.I.L.	Mean squares[a] Groups df=1	Error(b) df=98	Time df=1	TxG df=1	Error(w) df=98
5.1 Identifying alphabetical sequences based on first letter	3	68.33**	8.31	54.76**	14.59*	3.51
	I	8.56	3.66	7.61	16.86*	2.46
5.2 Identifying alphabetical sequences based on third letter	3	200.77**	16.39	515.29**	13.66	7.91
	I	96.89**	13.66	36.13**	22.05*	3.67
5.3 Identifying alphabetical sequences based on first, second, or third letter	3	141.95*	23.36	320.41**	40.35*	7.56
	I	282.18**	24.01	397.62**	21.55	7.31
6.3 Using dictionary guide words	3	407.58**	42.77	1082.41**	87.65	27.22
	I	881.27**	84.60	1501.52**	52.19	19.13
7.1 Finding definitions of single entry words	3	231.06**	12.30	201.64**	0.75	4.99
	I	52.89	23.05	93.85*	6.54	16.60
7.2 Finding definitions of multiple entry words	3	397.12**	24.51	424.36**	3.44	11.94
	I	160.01**	38.70	544.50**	10.46	12.82
8.1 Selecting definitions of single entry words	P	--	--	--	--	--
	I	366.30**	25.40	202.01**	41.60	11.60
8.2 Selecting definitions of multiple entry words	P	--	--	--	--	--
	I	197.92**	13.71	302.58**	6.64	3.69

Table A81 (Continued)

Basal reading skill	R.I.L.	Mean squares[a] Groups df=1	Error(b) df=98	Time df=1	TxG df=1	Error(w) df=98
9.1 Interpreting single pronunciation symbols	3	96.42**	9.77	488.41**	1.15	6.98
	I	342.27**	19.04	109.52**	0.02	5.01
9.2 Interpreting multiple pronunciation symbols	3	3.47	2.34	36.00**	0.27	2.14
	I	20.92*	3.69	56.18**	22.24**	2.87

*P of F <.05; **P of F <.01.

[a]df=48 for Error (b) and for Error (w) for comparisons involving reading instructional level 3 for all scores.

Table A82

Rate of Acquisition of the Normal and Superior Groups: Word Functions Skills

A. Means

Basal reading skill	R.I.L.	Normal group Fall	Normal group Spring	Superior group Fall	Superior group Spring
14.1 Recognizing functions of nouns	P	3.41	5.06	4.39	6.50
	I	5.83	7.43	7.57	9.50
14.2 Recognizing functions of verbs	P	2.57	4.37	3.70	6.59
	I	5.56	7.04	7.96	9.59
14.3 Recognizing functions of adjectives	P	2.35	4.35	3.17	5.59
	I	4.44	6.04	6.83	8.26
14.4 Recognizing functions of adverbs	P	2.28	3.67	2.98	4.78
	I	3.81	5.33	5.80	8.11

Table A82 (Continued)

Basal reading skill	R.I.L.	Normal group		Superior group	
		Fall	Spring	Fall	Spring
15.1 Specifying functions of nouns	P	2.59	3.63	2.96	5.07
	I	3.78	4.69	5.72	7.37
15.2 Specifying functions of verbs	P	2.48	3.61	2.91	5.61
	I	4.52	5.06	6.46	7.63
15.3 Specifying functions of adjectives	P	2.24	3.46	2.33	4.70
	I	3.56	4.54	5.65	7.33
15.4 Specifying functions of adverbs	P	2.30	2.44	1.52	2.37
	I	2.35	3.07	3.50	5.46

B. Results of Analyses of Variance

Basal reading skill	R.I.L.	Mean squares				
		Groups df=1	Error(b) df=98	Time df=1	TxG df=1	Error(w) df=98
14.1 Recognizing functions of nouns	P	73.24**	6.29	172.98**	2.63	3.78
	I	179.91**	9.71	153.13**	1.45	3.90
14.2 Recognizing functions of verbs	P	138.40**	7.57	264.50**	14.89	4.07
	I	304.43**	13.99	120.13**	0.28	3.75
14.3 Recognizing functions of adjectives	P	52.56**	5.76	239.81**	2.12	2.42
	I	263.43**	11.35	115.52**	0.31	3.08
14.4 Recognizing functions of adverbs	P	40.98**	5.30	124.82**	2.14	2.65
	I	281.99**	10.20	176.72**	7.67	2.95

Table A82 (Continued)

Basal reading skill	R.I.L.	Mean squares				
		Groups df=1	Error(b) df=98	Time df=1	TxG df=1	Error(w) df=98
15.1 Specifying functions of nouns	P	40.22**	5.07	117.05**	14.26	4.32
	I	265.56**	9.63	78.13**	6.89	4.81
15.2 Specifying functions of verbs	P	73.29**	5.92	171.13**	30.46**	3.21
	I	252.95**	11.37	34.45**	5.04	4.33
15.3 Specifying functions of adjectives	P	21.58	5.56	153.13**	16.35*	3.73
	I	296.46**	10.64	84.50**	5.95	3.88
15.4 Specifying functions of adverbs	P	8.96	3.39	11.05*	6.08	2.39
	I	154.82**	7.45	83.21**	18.92**	2.70

*P of F <.05; **P of F <.01.

Table A83

Rate of Acquisition of the Normal and Superior Groups: Comprehension Skills

A. Means

Basal reading skill	R.I.L.	Normal group		Superior group	
		Fall	Spring	Fall	Spring
16.1 Identifying cause-effect relationships directly stated in sentences	P	7.00	8.61	7.65	9.02
	I	9.13	9.48	9.78	10.09
17.3 Identifying main ideas directly stated in paragraphs	P	4.52	6.26	5.61	7.43
	I	6.91	7.69	8.48	9.30

Table A83 (Continued)

Basal reading skill	R.I.L.	Normal group		Superior group	
		Fall	Spring	Fall	Spring
17.1 Identifying main ideas directly stated in stories	P	4.00	5.43	5.20	6.57
	I	6.26	7.43	8.11	8.57
16.2 Identifying cause-effect relationships implied in sentences	P	6.87	8.46	7.87	9.00
	I	9.15	9.63	9.98	10.43
17.4 Identifying main ideas implied in paragraphs	P	4.00	6.11	5.37	7.26
	I	7.02	8.35	8.87	9.74
17.2 Identifying main ideas implied in stories	P	4.89	6.74	6.24	7.33
	I	6.91	8.04	8.37	8.98
17.5 Identifying details in stories	P	6.80	12.72	9.39	14.13
	I	13.76	17.22	17.63	20.11

B. Results of Analyses of Variance

Basal reading skill	R.I.L.	Mean squares				
		Groups df=1	Error(b) df=98	Time df=1	TxG df=1	Error(w) df=98
16.1 Identifying cause-effect relationships directly stated in sentences	P	14.03	4.75	112.50**	0.72	1.42
	I	19.67**	2.11	5.45	0.03	1.47
17.3 Identifying main ideas directly stated in paragraphs	P	63.76**	6.40	158.42**	0.09	2.56
	I	126.39**	3.70	32.00**	0.03	1.87
17.1 Identifying main ideas directly stated in stories	P	67.71**	8.08	98.00**	0.04	2.88
	I	110.94**	5.00	35.28**	6.26	2.12

Table A83 (Continued)

Basal reading skill	R.I.L.	Mean squares				
		Groups	Error(b)	Time	TxG	Error(w)
		df=1	df=98	df=1	df=1	df=98
16.2 Identifying cause-effect relationships implied in sentences	P	29.31*	5.80	95.22**	2.65	1.72
	I	33.21**	3.70	11.05**	0.01	1.32
17.4 Identifying main ideas implied in paragraphs	P	78.83**	9.20	202.01**	0.60	4.01
	I	130.25**	7.83	62.72**	2.67	2.02
17.2 Identifying main ideas implied in stories	P	46.53**	5.95	112.50**	7.27	2.48
	I	71.74**	4.50	39.61**	3.37	1.79
17.5 Identifying details in stories	P	199.04*	44.26	1447.22**	17.49	11.79
	I	567.17**	26.33	453.01**	12.04	7.19

*P of F <.05; **P of F <.01.